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UNITED STATES DEPARTMENT OF AGRICULTURE.

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WEEKLY NEWS LETTER

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HIGH LUMBER PRICES CHECK ON HOUSEBUILDING MOVEMENT

Difficulty and Delay in Securing Material Makes Construction Venturesome.

Forest Service, in Report to the Senate on Housing and Lumber Prices, Says Rise Wholly Disproportionate with Increase in Costs—Gives Examples.

Abnormally high lumber prices were in part responsible for the arrest of the housebuilding movement within the last few months, according to a report submitted to the Senate by the Forest Service of the United States Department of Agriculture.

During the latter half of 1919 and the early months of 1920, says the report, lumber prices in the United States increased more sharply and to far higher points than were ever known before. In March, 1920, average mill prices had increased 300 per cent and more over 1914. While the costs of production and distribution of lumber likewise increased, the rise in lumber prices was wholly disproportionate. "Present prices, though somewhat lower, are still excessive and yield profits unjustified by costs," says the report.

Shortage Almost World-Wide.

"A shortage in housing accommodations that is almost world-wide has brought home vividly the close relation of building to the comfort, health, and general welfare of the public. When for any reason construction falls below normal, overcrowding, high rents, lowered standards of living, and other evils follow."

Lumber prices, however, do not tell the whole story. Difficulty and delay in securing material and the impossibility of getting many of the grades desired tend to make the construction of a home at the present time a highly uncertain and speculative venture and take it out of the reach of large numbers of people.

According to figures of the United States Housing Corporation, the report states, normally 30 per cent of the number of buildings constructed are dwellings. In 1919, however, dwellings were only 15 per cent. Even before the war 1,000,000 families in the United States desired houses. In 1919 only 70,000 houses were built, when 500,000 were required to meet the demand. In 1918 house construction was still less than in 1919.

As examples of the increase in the cost of lumber, it is stated that the Pittsburgh home builder of 1913 paid $27 per thousand board feet for No. 1 common dimension framing. In 1920 he paid $72. Sheathing lumber No. 2 common yellow pine cost $26 in 1913 and $80 in 1920. Yellow-pine finishing lumber increased from $42 to $140. If plain oak finish was used instead of southern pine it cost $85 in 1913 and $260 in 1920. Yellow-pine siding rose from $36 to $120; B and better flat grain flooring from $38 to $142; plain oak flooring cost, in 1913, $70 per thousand feet, and in 1920 $290; and

(*Continued on page 8.*)

FORESTRY INCREASES THE FARM INCOME BY—

1. Making waste lands yield a profit by growing timber on poor soils, steep slopes, rocky lands, wet lands, unused corners, gullied or eroded lands.
2. Furnishing paying employment for men and teams during the winter.
3. Utilizing timber better on the farm and avoiding waste by cutting low stumps and small tops, using substitute woods in construction, treating nonlasting woods.
4. Increasing crop yields by planting forest tree windbreaks.
5. Growing more and better timber on the farm through protecting the woods from fire and overgrazing; selecting for cutting the mature, defective, overcrowded, and inferior kinds of trees, and leaving the straight, thrifty, and better kinds; planting to fill up openings in woodlands.
6. Marketing the higher grades of wood products direct to consumers at fair prices in the form of saw logs, poles, piling, cooperage bolts, handle bolts, posts, pulp wood, firewood, spoke blocks, tannin wood and bark.

MAKE YOUR WOODLAND PERMANENTLY PROFITABLE.

REPORTS ON WORTH OF MOTOR TRUCKS TO EASTERN FARMERS

"Saving Time," Say Many Farmers as Reason for Owning Them.

About 25 Per Cent of Owners Found to Have Better Markets Since Buying Trucks—Difficult to Arrive at Conclusions, Say Department Specialists.

"What do you find to be the greatest advantage of owning a motor truck?"

Of 753 farm owners of motor trucks who were asked this question by the United States Department of Agriculture, 91 per cent said "saving time."

About 25 per cent of these men had found better markets since buying their trucks, but 50 per cent of them had not cut down the number of their work stock by as much as a single head, while less than one man in ten had cut down his work stock more than two head.

Saves Time Rather Than Expense.

"Which merely goes to show," says a department specialist in farm power, "how difficult it is to arrive at a definite conclusion in a matter like this motor truck study we have just completed. It would certainly appear that any saving attributable to the motor truck on the farm is in time saved rather than in expense. Most of these men think that the profits accruing from the saving in time more than overbalance any extra expense entailed by the use of the motor truck. It is significant that the majority of these farmers are located a considerable distance from market, more than four-fifths of them being 5 miles or more from their shipping points, and the saving in time effected by their use of trucks is naturally greater than it would be on the average farm, which lies nearer to market than do most of the farms concerned in this investigation. The experience of the 753 farmers who have contributed to this study should enable the farmer himself to judge with a fair degree of accuracy as to whether the motor

truck would prove advantageous under his conditions."

The investigation in question was made during the past winter and spring. Farmers in the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, and Indiana, who have motor trucks for use on their own farms, were asked to report to the department the types and sizes of their farms, the use they make of their trucks, the cost of operating them, the advantages and disadvantages of trucks for farm use, and other related information.

A study of the reports of 753 of these farmers has just been completed by the Office of Farm Management and Farm Economics. The farms which these men operate are of all sizes and types, and the motor trucks are of all sizes, from one-half to 5 tons. The rated capacity of very few of the trucks is greater than 2 tons, however, and nearly half of them are of the 1-ton size.

Among the important facts revealed by the investigation may be mentioned the following:

Only 18 per cent of these farms are less than 5 miles from market and nearly one-fourth of them are 20 miles or more from market.

Ninety-five per cent of the farmers believe that their trucks will turn out to be profitable investments.

One-ton trucks are preferred by more men than prefer any other size. About half of the owners of one-half and three-fourths ton trucks prefer sizes larger than they now own.

In the opinions of these men the principal disadvantage of a motor truck is "poor roads."

Trucks Are Time Savers.

As compared with horses and wagons, the trucks save from one-half to two-thirds of the time required for hauling materials to and from these farms.

These farmers have return loads for their trucks about one-fourth of the time.

A majority of them still use their horses for some road hauling.

On the majority of the farms all the hauling other than road hauling is done with horses and wagons.

About one-fourth of the men do some custom hauling with their trucks. The average amount received per year by those who do such work is $174.

On the average there are about eight weeks during the year when the roads are in such condition on account of mud, snow, etc., that these trucks can not be used. The roads on which three-fourths of them usually travel are all or part dirt.

About one-fourth of the farmers have changed their markets for at least a part of their produce since purchasing trucks. For those who have changed markets, the average distance to the old market is 7 miles, and the average distance to the new market is 20 miles.

Average Life of Trucks.

The owners estimate that, on the average, their trucks travel 3,820 miles per year, and are used on 173 days per year.

The average life of the trucks is between 6½ and 7 years, and in most cases depreciation is the largest single item of expense in connection with their operation.

Most of the owners of one-half and three-fourths ton trucks prefer pneumatic tires, the owners of 1-ton trucks are about evenly divided in their preference, and most of the owners of trucks larger than 1 ton prefer solid tires.

Over two-thirds of the trucks had not been out of commission when needed for a single day during the year covered by the report, and nearly the same proportion of the owners stated that they had not lost any appreciable time on account of motor and tire trouble, breakage, etc., when using their trucks. However, about one truck in thirty had been out of commission 10 days or more.

The average cost of operation of the one-half-ton trucks was about 8 cents per mile; of the three-fourths-ton trucks, about 13 cents; of the 1-ton, about 12 cents; of the 1¼ and 1½ ton, about 19 cents; and of the 2-ton, about 20 cents.

The average cost of hauling crops, including the value of the driver's time at 50 cents an hour, was about 50 cents per ton-mile with the one-half-ton trucks, 34 cents with the three-fourths-ton, 26 cents with the 1-ton, 24 cents with the 1¼ and 1½ ton, and 18 cents with the 2-ton trucks.

About four-fifths of the men state that their trucks decrease their expense for hired help. On the average they estimate that this decrease amounts to $324 per year.

Over half of the 205 truck owners whose farms contain more than 120 crop acres own tractors. The number of work stock kept on the farms where both trucks and tractors are owned is only slightly less than the number kept on farms of corresponding size where only trucks are owned.

A TWENTIETH CENTURY SANTA.

Ten years ago no industry existed that was capable of placing American-grown varieties of European grapes upon the market for the Christmas trade, say marketing experts of the United States Department of Agriculture. Then the department devised a method of packing the grapes in redwood sawdust in veneered drums, and of handling the product under refrigeration in transit and in storage from the time of harvesting until the period of the holiday markets. To-day the industry ships more than 500 carloads of grapes annually.

A few years ago the supply of redwood was threatened. Once more the Department of Agriculture aided. It experimented with various kinds of wood and demonstrated that spruce could be satisfactorily used. The supply of spruce is practically inexhaustible. To the trade the department's activities mean uninterrupted business; to the consumers, the continuance of a luscious fruit.

Tobacco Prices for 300 Years Show Height Reached in 1919

Little information is at hand concerning the price of tobacco to growers before 1863. In the money of the time, the Jamestown tobacco sent to England in 1618–1620 had a price of 54¾ cents a pound, but by 1639 the price had fallen to 6.08 cents, and by 1664 to 3.09 cents. A price of 1.52 cents is recorded for the Virginia and Maryland crop of 1730, of 4.2 cents for that of 1735, and from 2.3 to 4.56 cents thereafter for the colonial crops of various years to 1790. The producers' average selling price of the tobacco of 1847 has been estimated to have been 5 cents a pound; of 1849, 7 cents; and of 1853, 10 cents per pound. These facts are assembled in an article contained in the Yearbook of the United States Department of Agriculture, recently issued.

The annual estimate of the producers' average price of tobacco by the Bureau of Crop Estimates began in 1863 with 14.8 cents per pound in gold. In the decade 1865–1874 the average was 9.5 cents, and low water mark since the Civil War was reached in 1895–1904, when the average was 7 cents. In one year—1896—the price was as low as 6 cents. Thereafter the upward movement of prices brought tobacco to 10.1 cents per pound in 1905–1914, 14.7 cents in 1916, 24 cents in 1917, 28 cents in 1918, and 39 cents in 1919. The gain in price since 1896 may not have been entirely due to the diminishing purchasing power of the dollar. There was increased cost of production, and producers have been stronger financially and more able to hold for a higher price. Moreover, the postwar demand has been unprecedented.

"Broken eggs can not be mended."—(Lincoln.) Neither can "cashed-in" war-savings stamps grow to their maturity value.

BLAMES HARDWOOD SHORTAGE FOR HIGH FURNITURE PRICES

Forest Service Gives Result of Investigation in Report to the Senate.

Automobile Wheels and Garden Tools Also Found to Be Affected by Scarcity of Timber—Public Pays 3 or 4 Times Prewar Prices.

The scarcity of high-grade hardwood lumber and its increased cost have contributed largely to the increased costs of furniture, says the Forest Service of the United States Department of Agriculture in a report to the Senate on timber depletion, prices, exports, and ownership. Higher lumber prices are multiplied in retail furniture prices. An increase in raw material cost to the manufacturer of $5 adds $9 to $10 to the retail charge, and the purchaser actually pays for the lumber in a piece of furniture three or four times prewar prices.

Other industries, such as those making veneer, handles, vehicles, and agricultural implements, which require high-grade hardwoods, have likewise been seriously affected. The history of all of these industries has been much the same, the report states. They began in the Northeast, where for many years local supplies of timber were ample for their needs.

Industries Forced Westward.

The waning of these supplies forced the industries westward, where they found magnificent virgin hardwood stands, and expanded rapidly. In the last 15 or 20 years they have been forced to reach out both north and south for timber as the forests along the Ohio River were exhausted. At present their sources of supply are very largely the more remote and inaccessible parts of the Appalachian Mountains and the Lower Mississippi Valley. When these forests are cut out, no other extensive virgin hardwood forests will be left for the industries to draw on.

A demand for furniture in excess of the normal capacity of the factories, low stocks of hardwood lumber, greatly decreased production, and the difficulty and uncertainty of obtaining adequate supplies of material, have all injected a very large speculative element into the furniture industry.

Veneer is widely used by furniture makers, manufacturers of musical instruments, the automobile industry, and box makers. The veneer maker requires high-grade logs, usually 16 inches or more at the small end, which come for the most part from virgin stands of timber. Red gum, white oak from the South, and maple, birch, and basswood from the North are most generally used. The general depletion of hardwoods has made the industry dependent largely upon the lower Mississippi Valley, our only reserve of virgin hardwoods of any extent. Adverse weather conditions here have caused a falling off in log supplies. Production of veneer and by-products has fallen off 50 per cent. Wholesale prices have gone up 300 to 400 per cent, and users have bid frantically against each other. The consumer, says the report, pays the full bill, and more.

No Substitute Found.

No substitute has been found for the high-grade hickory and ash required by handle makers and the vehicle and agricultural implement industries. The supplies came principally from the South, where the most accessible supplies have already been cut. So scarce has the supply become that large firms are literally combing the territory to secure material.

TIMBER RAISING IN EASTERN UNITED STATES PAYS BECAUSE—

1. There is plenty of cheap land unfit for agriculture.
2. The abundant rainfall permits rapid tree growth.
3. Transportation facilities by rail and water are good.
4. Numerous large cities furnish an adequate market.
5. The region is far removed from the virgin supplies of the Pacific Northwest.

It is said that five years more will see the end of the supply of the northern upland ash, which is preferred to the swamp-grown variety of the lower Mississippi Valley. The demand for handles is so great that manufacturers can not meet it. Any price necessary for raw material is being paid. Competition with other industries using the same woods, particularly the manufacturers of automobile wheels, is keen. Wholesale prices have more than doubled, and retail prices are in about the same proportion. The small handle factory is being gradually eliminated, and there is said to be a steady drift toward the concentration of handle manufacture by large concerns and the disappearance of local industries.

Set Maximum Prices.

Makers of vehicles and agricultural implements compete with the handle manufacturers for hickory and ash and with furniture makers for oak. Large areas must be covered to secure the required material and expensive buying organizations have to be maintained. Manufacturers usually carry a two-years' supply in stock, but present prices are so high that many concerns have set maximum prices and do not buy at higher figures. It has been found that prices of agricultural implements can not be increased beyond a certain point without a falling off in sales. The price of automobile wheels, however, is readily absorbed. The result is that this class of industries is able to outbid the others for raw material. The largest element of increased cost is said to be attributed by one big concern to the expense of securing these special stocks from remote and inaccessible regions.

Excessive losses are reported, sometimes as high as 40 per cent, in kiln drying green stock forced on the market by lack of time for air seasoning. This is said to be due to inadequate kiln equipment and personnel in manufacturing plants which have not in the past found such work necessary. This loss again accentuates the shortage and high costs of the desired woods.

MIDDLE WEST COUNTY AGENTS FIND TB. IN POULTRY FLOCKS

County agents in certain sections of the Middle West report the finding of tuberculosis in some of the chicken flocks in their localities. In order to locate and check any further outbreaks of this disease they are requesting all farmers whose chickens die without any apparent cause to notify the farm bureau and to send in the livers of the dead birds for examination. The disease is likely to show in this organ most plainly.

Tuberculosis of fowls is a chronic, contagious disease characterized by the development of nodules called tubercles in various organs of the body, but most frequently in the liver, spleen, and intestines. It is readily communicated to most species of birds and to several species of mammals, but it is almost impossible to communicate the tuberculosis of man and cattle to fowls.

One practical course to take when the disease is found in a flock is to kill off the whole flock as quickly as possible and to disinfect thoroughly all the houses and runs immediately, says the Bureau of Animal Industry of the United States Department of Agriculture.

Unless disinfection is thorough the new flock is likely to contract the disease when placed in the infected houses and yards. When possible new birds should be placed on new ground. Another method of combating tuberculosis is to dispose of all hens after the second laying period and to destroy affected fowls as soon as symptoms appear.

The eggs of the diseased birds frequently contain the bacilli, experiments prove, and young chicks hatched from such infected eggs are diseased.

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PERUVIAN ALFALFA SUPERIOR TO MORE COMMON VARIETIES

Peruvian alfalfa has decided advantages over other varieties for those sections of the United States where it will grow, say forage experts of the United States Department of Agriculture. This should be taken as applying to the true or hairy Peruvian alfalfa and not to the so-called smooth-leaved Peruvian alfalfa. This later name the specialists regard as unfortunate, as it leads to confusion in the seed trade and gives unscrupulous dealers an opportunity to make excessive profits on mixed seeds. The "smooth Peruvian is hardly distinguishable from common alfalfa."

The principal advantages of Peruvian as compared with common alfalfa are its more rapid growth, quick recovery after cutting, and ability to grow in cooler weather, thus furnishing more pasturage during the winter and in late fall and early spring.

The territory in which common alfalfa could be profitably replaced by Peruvian includes a comparatively narrow strip down the Pacific coast and along the Mexican border and the Gulf, thence up the Atlantic coast to the vicinity of Charleston, S. C. It can not be grown to advantage where the winter temperature falls below 10°.

This alfalfa was first introduced into this country by the United States Department of Agriculture in 1899. The earliest introductions were not perpetuated, however, and it was not until 1903 that considerable efforts were made to produce a supply of seed. The subject of the Peruvian alfalfa industry is discussed in detail in Department of Agriculture Circular 93, just issued.

PEACH SHIPMENTS LEAD ALL SHORT-SEASON TREE FRUITS

Peaches lead all other short-season tree fruits in the United States in the number of carloads shipped from producing regions annually, according to figures collected by the Bureau of Markets of the United States Department of Agriculture. Considering all fruits, peaches rank fourth in car lots sent to market, being surpassed only by the long-season fruits—apples and oranges—and by watermelons. The approximate yearly average numbers of cars of the four fruits mentioned reaching market during the past four years are: Apples, 67,000; oranges, 35,000; watermelons, 29,000; peaches, 25,000.

The only close competitors of peaches on the markets of the United States are grapes, of which about 22,000 carloads were shipped annually, and cantaloupes, the annual shipments of which were approximately 17,000 cars. The carloads of strawberries and pears shipped were slightly less than half those of peaches. An average of approximately 7,000 carloads of grapefruit and 3,000 cars of plums and prunes combined were shipped annually for the past four years.

The combined peach shipments of Georgia and California are as great as those of all other States combined.

STUDIES SHOW LABOR NEEDED TO PRODUCE VARIOUS CROPS

The approximate amount of labor required to raise some of the more important crops has been determined by recent farm studies conducted by the Office of Farm Management, United States Department of Agriculture. The results show that it requires the work of one man and one horse for a 10-hour day to cut, cure, and harvest an acre of hay. Oats, wheat, barley, rye, buckwheat, and millet consume more labor; under normal conditions these grains require the labor of a man for 2 days and for the horse 3 days. Corn for the silo in the Central States consumes 3 days of man labor and 5.5 of horse work. Tobacco in Kentucky uses 35 days of man labor against 8 days for the farm horse, but onions, sold in bunches, as determined through studies in Ohio, top the list of vegetables in the amount of man labor they require. Onions use 149 days of man work, but only 10 of horse work. Beets and carrots, also sold in bunches, come next, with 82 man-days to each acre and 8 days' horse labor.

It is interesting to note that a horse, in the Eastern States, requires 12 ten-hour days per year from his master to care for him, and he contributes only three-quarters of one day to his own upkeep—hauling feed, etc. Dairy cows need 18 days from the man and 2 from his horse each year.

These figures are given in Farmer's Bulletin 1139, to aid the farmer in an analysis of his business. They will be useful in assisting the farm operator to estimate his labor needs for the next season.

EFFICIENT TEAMWORK DRIVES BAD MEDICINE FROM MARKET

A patent medicine manufacturer, who lives in Montreal and has been in the habit of coming down to Lowell, Mass., twice a year and compounding a lot of his preparations, is out of luck in New England as the result of a successful piece of teamwork by the United States Department of Agriculture and State officials in Maine, New Hampshire, Vermont, Rhode Island, and Connecticut. About 200 simultaneous seizures were made and resulted in so nearly cleaning up stocks of two preparations—a sirup of anise and a cough sirup—that the manufacturer has notified all of his agents that he has discontinued business, at least temporarily. The preparations were seized on the ground of misbranding as to their curative qualities. The sirup of anise, which contains morphine, was recommended to mothers for babies suffering from colic, coughs, sleeplessness, painful teething, and various other infantile disorders. The cough sirup was recommended as a cure for the grippe, whooping cough, and consumption. Success in driving these preparations from the market through the simultaneous seizures was possible only because of the cooperation of the State officials.

REPORTS FROM SOUTH CAROLINA.

Developments in live-stock improvement in South Carolina show the diversified character of animals kept on farms. Records kept by the United States Department of Agriculture in connection with the "Better-Sires, Better-Stock" campaign indicate that swine raising is receiving unusual attention in that State. In one day recently the department enrolled in the campaign more than 150 pig-club members in South Carolina who will breed their stock to purebred sires only. Other live-stock owners in that State report the breeding of the usual kind of farm live stock and also other kinds ranging from pit game birds to Mexican burros.

Signs Pink Bollworm Quarantine Order—Growing Crops Put Under Joint Control

The Acting Secretary of Agriculture on July 21 signed the pink bollworm of cotton quarantine, applicable to Louisiana and Texas. It is effective August 1. The operation of the quarantine is restricted to areas known to be infested or suspected of possible infestation, but this restriction is conditioned upon enforcement by the States concerned of certain necessary control measures. These measures are subject to modification by the Secretary of Agriculture at any time. For present purposes they are summarized under six heads.

Joint Control Ordered.

The growing crop must be under the full control of State authorities in cooperation with Federal authorities, who may inspect fields as often as necessary and may require prompt destruction of any cotton in fields that are found to be infested. State and Federal authorities shall exercise joint control over all cotton seed grown in the quarantined areas, shall forbid its use for planting and shall require its prompt milling within the State, and if possible within the infested or regulated area where it is grown. If any such seed must be moved out of the infested or regulated area for milling, the movement must be made under such regulations as the authorities may see fit to require. All cottonseed hulls are to be disinfected at the mills as a continuing part of the process of hulling and milling. All forms of lint cotton are also placed under full joint control of State and Federal authorities. It can be shipped out of State only through designated ocean ports of the State concerned, and, if it reenters the United States, must come by all-water route through New York, Boston, or some other northern port designated in the permit and shall there be treated and controlled as is foreign cotton. All cotton from the quarantined area of Louisiana must go out through the port of New Orleans, and Texas cotton from quarantined areas must go out through one of the ports of Galveston, Houston, Texas City, or Port Arthur.

All railway cars, boats, and other vehicles used in conveying cotton or cotton products grown in the infested districts or that are fouled with such products are subject to inspection, cleaning, and disinfection as a condition of movement within the State. The same applies to hay and other farm products, farm household goods, and farm equipment.

All volunteer or other cotton growing in a noncotton zone must be promptly destroyed.

MORE ADEQUATE SAFEGUARDS AGAINST PLANTS FROM ABROAD

Important new safeguards will go into effect August 1 in all ports of the United States regarding plants and plant products whose introduction into this country is restricted or prohibited by quarantine or other orders of the United States Department of Agriculture. The new regulations have just been issued by the Secretary of Agriculture and pertain to the arrival of prohibited and restricted plants carried on vessels arriving at ports where entry or landing is not intended. The provisions supplement regulations which have been in force for several years relating to entry for immediate export and entry for immediate transportation and exportation in bond of prohibited plants and plant products. The enforcement of the quarantines of the Department of Agriculture at ports of entry has shown the necessity for more adequate safeguards with respect to restricted and prohibited plants or plant products where entry or landing at a port is not intended. These safeguards have now been provided, making less likely the escape of insects or plant diseases from vessels temporarily stopping in United States harbors.

The new regulations provide that a report shall be made to the Secretary of Agriculture by the captain or other person in charge of a vessel arriving at a United States port and containing on board plants or plant products the entry of which is prohibited or restricted. This report must state the nature and quantity of such plants or plant products, the country or locality of origin, the date of arrival, the date of sailing from the United States port, together with a statement indicating the steps taken to prevent the escape of insects or plant diseases which they may carry.

It is further provided that the person in charge of such vessels must allow inspection of his craft and must take such measures as are prescribed by the inspector representing the Department of Agriculture, to prevent the landing of any such plants or plant products or the escape of insects or plant diseases which they may carry. The collector of customs, in cooperation with the inspector of the Department of Agriculture, may require such persón to destroy the objectionable plants and plant products or to remove them forthwith from the port and the territorial waters of the United States. If necessary, the inspector of the department may require the disinfection of the vessel in accordance with methods prescribed by the Department of Agriculture.

GRADING ADDS TO FARMERS' PROFITS.

When a farmer orders a box of bolts of a certain make and size he does not expect to find a thin layer of the bolts specified on the top of the box and assorted bolts underneath. In the world of commerce a manufacturer who pursued such practices would soon be bankrupt.

The same principle applies to the sale of farm products, say specialists of the Bureau of Markets, United States Department of Agriculture. Before sending produce to market the farmer should sort it as to quality and size. The Bureau of Markets from time to time has recommended grade specifications for various products, and wherever these recommendations have been followed satisfaction and increased monetary returns have generally resulted. For instance, it is estimated that in 1919 the potato growers in Virginia increased their profit a half million dollars by grading their produce. Similar results are being obtained in other States.

CHANGE GRAIN-INSPECTION UNITS.

In accordance with the provisions of the United States Grain Standards Act the Secretary of Agriculture has redesignated the grain-supervision districts and their headquarters points.

The United States has been divided into 33 supervision districts, each of which will follow State and county lines entirely. The identification of supervision districts by numerals and many of the former dividing lines based upon railroad routes have been discontinued. Under the new arrangement entire counties are included in one or another of the districts named. These changes are expected to eliminate uncertainty on the part of the grain trade and licensed inspectors, especially in the case of county inspection points, that frequently resulted from the division of counties into two or more districts.

The redesignated districts and their headquarters points are enumerated alphabetically in Bureau of Markets Service and Regulatory Announcement No. 63 shortly to be issued by the United States of Agriculture.

Invasion of Fall Army Worms Likely—Farmers Must Be Alert to Protect Crops

The fall army worm is doing general injury to field crops in South Carolina and Mississippi, and injury may be expected in the north—in North Carolina, Virginia, and the more northern States—as the season advances, probably within the next three weeks. In South Carolina the insect has been especially injurious to young corn, alfalfa, and sorghum.

As the fall army worm advances north, farmers can prevent serious damage to their crops if they are on the alert. The United States Department of Agriculture advises every farmer to provide himself with a practical spraying outfit, and to keep on hand a few pounds of one of the standard insecticides, such as arsenate of lead, Paris green, or arsenite of zinc. In closed containers they may be kept indefinitely without deterioration, and will be useful in connection with some of the other pests even if the army worm invasion does not come. Every farmer should have at hand also a copy of Farmer's Bulletin No. 908, which tells how to mix and apply insecticides, and of Farmers' Bulletin No. 752, which tells in detail how to control the fall army worm. The bulletins may be had free on application to the United States Department of Agriculture, Washington, D. C.

Should Keep Constant Watch.

Thus provided, the farmer should keep constant watch over the growing crops and thus be in a position to meet invasions and vanquish the pests before they have a chance to do serious damage. For those who may not have bulletins at hand, the following summary of control measures may be useful.

The worms are likely to be found, first, feeding in crab grass or other grasses in the cornfields, or in grass-like grains. If the stand is not too thick for the worms to be reached easily by the insecticide, it should be sprayed with a mixture of 1 pound of powdered arsenate of lead to 50 gallons of water, or if the paste form is used, 2 pounds to 50 gallons of water.

When the worms begin feeding on corn, they usually attack the bud of the plant first. A mixture of 2 pounds of powdered arsenate of lead of 3 to 4 pounds of the paste to 50 gallons of water is required, and the spray should be applied so as to force the fluid deep into the bud of the corn. If Paris green is used in place of arsenate of lead, lime must be added to prevent burning. The formula is: Paris green, 10 ounces; freshly slaked lime, 2 pounds; water, 50 gallons. Applied to growing crops, arsenite of zinc also requires a mixture of lime to prevent burning. The formula for the arsenical is: One pound of the chemical, 1 pound of freshly slaked lime, and 50 gallons of water. White arsenic should never be applied to growing crops in any form, as it is strongly caustic, and will burn. Arsenate of lead is the safest insecticide for use on growing corn.

Poisoned Bait Effective.

When the army worms are marching or in fields where their preferred foods are not present, poisoned bran bait is very effective. It is composed of 50 pounds wheat bran, 1 pound Paris green or white arsenic. After the bran and insecticide are well mixed, add 2 gallons of low grade molasses, to which may be added sufficient water to make enough liquid to thoroughly dampen the bran.

An addition of 5 pounds of salt to 50 pounds of bran helps to keep the bait in a moist condition, but is not necessary. The addition of 6 finely chopped lemons or oranges appears to make the bait more appetizing to the worms, and, therefore, increases its effectiveness. The bait is scattered broadcast over the infested fields.

When the worms are on the march or are starting in on one corner of a field of grain head them off by plowing a deep furrow directly in front of them, then kill the worms falling into this furrow by dragging a log through it. Where the whole field is infested, plow a furrow entirely around it so as to keep the worms out of the surrounding fields. Keep the furrow free from rubbish so that the worms will have no means of crossing it. Shallow post holes dug at frequent intervals at the bottom of the furrow will trap many worms, which can then be destroyed by crushing. If the subsoil will hold water well, the holes may be partially filled with water and a little coal oil or petroleum poured over it. The oil will soon kill the worms that fall into the hole.

COTTON-GIN INSURANCE CUT THROUGH SCIENTISTS' AID

The average cotton ginning plant in the South or Southwest is insured for about $6,000. At the rate of $4.50 for each $100 the insurance premium amounts to $270. The high rate has been based on the number of fires caused by the accumulation of static electricity in the working machinery. The Bureau of Chemistry of the United States Department of Agriculture comes to the aid of gin owners with a device for grounding the current, so effective that this year the insurance companies decreased their rates on protected plants 25 cents on each $100 insurance. There are approximately 40,000 ginning plants in the South, and the decrease averages $15 to each plant—a total saving of $600,000, if all the gins were insured. It is considered likely that next year will see a reduction still greater.

Somewhat similar grounding apparatus, together with special dust-collecting fans designed by the department and installed on thrashing machines to prevent grain-dust explosions and fires, has brought an insurance rate reduction of 20 per cent with the probability of further decrease. This is an important item where thrasher insurance rates ran as high as $80 and $100 for each $1,000 of thrasher property.

VARIATION IN QUANTITY A TEASPOON WILL HOLD

Five cubic centimeters is what the Bureau of Standards has set as the theoretical quantity a teaspoon holds, but all spoons do not conform to this. The housekeeper measures with a teaspoon and should fill it "level" not "heaping." How many teaspoons does a pound of baking powder contain? Apparently the number depends on yourself, upon the spoon used, upon the brand of baking powder you buy, upon the can in the lot which you happen to get, and upon a few other factors which though seemingly inconsequential do enter into the problem.

A pound of baking powder lasts longer with some cooks than it does with others. In an endeavor to learn where the difference is made the experimental kitchen in the Office of Home Economics of the United States Department of Agriculture recently conducted a series of experiments.

Various types of cooking teaspoons were first experimented with to determine the exact amount held in each case. Both the ordinary teaspoon and those "measuring spoons" which are linked together in sets were tested. A variation of from 126 to 150 teaspoons was found in the same pound can when different teaspoons were used.

The personal equation also enters into the amount which is called a teaspoonful. It was found the differences due to individual manipulation ranged from 10 per cent to 30 per cent, a wider range of variation than those due to the different capacities of different teaspoons.

Sudan Grass a Second Line of Defense—Wins a Place in American Agriculture

Ten years after its introduction to the United States from Khartum, Africa, Sudan grass was being successfully grown in nearly all parts of the United States. It does not serve well either as a "money crop" or a soil improver, hence it may never find a permanent place in regular crop rotations. It has, nevertheless, a very important place in the farmer's second line of defense as a catch crop which can be planted to give satisfactory returns when conditions have brought failure to other hay crops. This is the verdict pronounced by the United States Department of Agriculture in Farmers' Bulletin 1126 recently issued.

Sudan grass is replacing millet as the premier catch crop in many localities because of its ability to produce a fair yield and a high quality of hay under conditions of low rainfall, its rather short growing season, and its ability to thrive on a wide range of soil types. Large yields of Sudan grass are obtained only on good soils, but the grass fails completely only on cold, poorly drained land.

Equals Alfalfa in Yield.

Sudan grass produces heavily. In California under irrigation it has made yields of 9.8 tons of field-cured hay an acre, when alfalfa produced but 8.3 tons under like conditions; it ordinarily yields about the same as alfalfa under irrigation in the Southwest, but Sudan grass gives its full crop in three cuttings against the four or five required for alfalfa. It is the only grass yet found which in this part of the United States ranks as the equal of alfalfa in point of yield and quality of the hay. Its record in this respect has led to its use in "patching" old alfalfa fields when the stand of alfalfa has been destroyed. In the Southern Great Plains, where there is a low rainfall, Sudan grass grown without irrigation will yield from one to three tons of hay to the acre.

There are certain parts of the United States where the Department of Agriculture considers it unwise to depend on Sudan grass for hay. This is true of the strip of territory 200 miles wide along the northern boundary; the regions of high altitudes in the Western States; and also most of Florida and a narrow strip of land along the Gulf coast. Low temperatures prevent success with the grass in the first two regions named, and disease is the limiting factor along the Gulf coast. In a majority of the Central and Southern States, however, climatic and soil conditions are favorable to Sudan grass.

Although Sudan grass is best adapted by nature to use as a hay crop, it is also used with great success as a soiling and pasture crop for summer pastures. Its use as a silage material is limited by the fact that it is easily made into hay and fed as such with very little waste, and also because corn and sorghum both outyield it and are generally available throughout the region where Sudan grass is grown.

Matures More Evenly.

In the semiarid districts the highest yields are obtained when the grass is sown in rows so as to allow of cultivation. The advantage in yield of the row over the drilled seedings is so small, however, that most farmers prefer to avoid the necessity of cultivation by drilling or broadcasting the seed. A common grain drill handles well-cleaned Sudan grass seed without trouble, and the hay from drilled seedings is finer stemmed and matures more evenly than row plantings.

The feeding value of Sudan grass is equal to timothy hay. In localities where soy beans or cowpeas do well these legumes may be grown in mixtures with the Sudan grass. Such a mixture produces a hay of higher feeding value than the grass alone, because of the high protein content of the legumes.

Sudan grass hybridizes freely with the sorghums. It is necessary, therefore, if pure seed is produced, to have the Sudan grass field at some distance from any sorghums, otherwise it will result in a mongrel crop the following year.

The Department of Agriculture's new bulletin goes very thoroughly into the details of cropping, planting, harvesting—both for hay and for seed—as well as the best methods of feeding the hay to live stock.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended July 24, 1920:

The Making and Feeding of Silage. (Revised.) Farmers' Bulletin 578.

Forage for the Cotton Belt. Farmers' Bulletin 1125.

Sudan Grass. Farmers' Bulletin 1126.

City Milk Plants: Construction and Arrangement. Department Bulletin 849.

Development of the Peruvian Alfalfa Industry. Department Circular 93.

Motion Pictures of the Department of Agriculture. Department Circular 114.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 579; Department Bulletin 849; Department Circular 93.

WILL ANNOUNCE U. S. GRADES PROPOSED FOR MILLED RICE

United States grades for milled rice grown in continental United States, as recommended by the United States Department of Agriculture, will soon be issued.

Public hearings were held in March, 1920, at which growers, dealers, millers, and others interested made suggestions. The grades recommended are the result of extensive investigations conducted by the Department of Agriculture relative to the various phases of the rice industry; of observation and experience of the department with the permissive standards published in September, 1918, and of the suggestions received by the department at the hearings.

The classification of the proposed grades is based on the length of whole kernels for classes Nos. 1, 2, 3, and 4, and on the size of broken kernels for classes Nos. 5, 6, and 7. The grade designations adopted are Extra Fancy, Fancy, Choice, Medium, and Sample Grade. The original recommendation of the department was for numerical designations only, consistent with the standards for shelled corn, wheat, and oats, but at the urgent request of the rice trade generally, the grade names used at present in commercial practice were adopted. However, the numerical grade equivalents have been placed in parenthesis after each grade name and it is recommended that the numerical grades be used to as large an extent as possible.

The grades are not fixed and established at this time under the United States grain standards act, but it is hoped that they will be adopted by all agencies engaged in the handling of milled rice. It is believed that with the voluntary and general support of all interested parties these standards will assist very materially in the marketing of milled rice.

The grade requirements will be issued shortly in a department circular now in course of printing.

Sheep scab often causes large loss because of a decrease in the quantity of wool produced, a loss in weight and general condition, and the death of many sheep. While the disease is highly contagious and its effects severe, it can be easily cured.

Shows Factory Owners Danger of Dust—Explosions Menace Life and Property

Explosions in grain elevators and grain-product mills during the 20 months ending October, 1917, resulted in the loss of 24 lives, 36 persons severely injured, and cost American industry $6,000,000 in property destroyed. It was then that the Bureau of Chemistry of the United States Department of Agriculture, in cooperation with the United States Grain Corporation, undertook an extensive campaign for checking this serious destruction.

The result was the evolving of inexpensive devices now recommended by the Government; and during the next 19 months, in the mills protected by these devices, there was no loss of life from explosions and only a very small amount of damage to property. The whole theory of dust explosions is so new that few factory owners have become aware of the menace to life and property ever present in mills and elevators not protected by the simple, inexpensive devices. Few realize the damage done by these explosions and fires.

Prepares Bulletin.

For bringing this to the attention of manufacturers and the public generally, the Bureau of Chemistry has prepared a bulletin entitled "Grain Dust Explosion Prevention," which is now available for distribution.

While disasters from explosions of dust threaten every, or nearly every, modern manufacturing industry where the operation produces dust, the cause may be easily removed, and with the cause goes all danger of an industrial accident which may be of awful proportions.

A single explosion in a Middle Western cornstarch factory killed 43 persons and destroyed $3,000,000 worth of property.

On February 26, 1920, an aluminum-goods factory in Wisconsin suffered a dust explosion that killed six girl workers and seriously injured five others.

Many other accidents of equally appalling nature are cited in the bulletin, and a study of the work would seem to indicate that most industrial dusts have the dangerous quality known to be possessed by grain dust, starch, coal, and aluminum dusts.

It is believed manufacturers of America will appreciate such literature as is being offered by the Department of Agriculture to help them realize that modern factory conditions have developed a new destructive enemy, and that the enemy is present in their own plants. That dust will explode is no longer a scientific theory; it is a hard, established fact and a condition which must be anticipated and insured against by the mill or elevator operator in just the way that he insures his property against ordinary fire losses. The methods employed so successfully by the Bureau of Chemistry in protecting the gigantic stores of grain handled by the Government during the war are simple and efficient and the principles are thoroughly discussed in the free bulletin.

Workers Can Assist.

If you are a workman in a mill or elevator you can assist in preventing these explosions of dangerous dusts by observing the precautions recommended by the Government.

Drop a card to the Bureau of Chemistry, Department of Agriculture, Washington, D. C., and find out how you can cooperate.

If you are a mill owner or operator, you are familiar with the conditions at your plant. By writing to the above address you can get in touch with men trained in dust-explosion prevention. You will probably be able to secure information of practical value in the operation of your mill.

And you, Mr. American Ultimate Consumer, might ask for a pamphlet, too, and find out how much your annual tax for these strange fireworks amounts to. One explosion ruined grain enough to feed an army of 200,000 men for a year—and you pay more for your loaf because of it. Find out what you can do to encourage the work so well begun.

HIGH LUMBER PRICES CHECK ON HOUSEBUILDING MOVEMENT

(Continued from page 1.)

quartered oak rose in the same period from $102 to $352.

The total cost of houses has increased proportionately, the report states. "A frame house built in Washington, D. C., in 1917 for $6,250 is now being duplicated from original plans at a cost of $12,250. A St. Paul architect reports that a house was built for $4,240 in 1915, not including plumbing, heating, and wiring, and that a house built from the same plans in October, 1919, cost $7,724, while for identical plans in February, 1920, the cost rose to $11,820, or 179 per cent over the 1915 price. The lumber and millwork costs in 1920 were $5,039, or $799 more than the total cost of the house in 1915. All of the items increased in 1920 over 1915, but with the exception of an insignificant item for a bond the percentage increases for lumber (304 per cent) and millwork (222 per cent) were the highest. On a six-room frame house built in Washington, D. C., for $4,771.60 in 1913, bids on identical plans in May, 1920, total $11,465.50.

"The lumber for a ready-cut, one-story, five-room house which was listed at $883 in 1915 had been raised to $3,272 in April, 1920, a total increase of 270 per cent," says the report. "Another company dealing in ready-cut houses listed the material for a two-story seven-room house at $1,995 in 1915 and now lists it at $5,606.90, an increase of 181 per cent."

Can Not Afford Prices.

Some kinds of industrial construction can go forward regardless of uncertainties and cost, but ordinary homebuilders can not afford to pay the lumber prices which are now asked.

This condition of affairs is partly due, the report points out, to the depletion of the timber supply of the country. One after another the great softwood forests of New England, the Lake States, and the South have been attacked, and successively diminished. For the last 20 years or more material from long-leaf pine from the South has held a dominant place in the market, but the end of the stand of southern yellow pine is now in sight and within 10 years' time the South will produce no more lumber than it will need to satisfy its own demands. The only remaining large supply of softwood timber in the country is that of the Pacific coast and already this is being called upon to make up the deficit in the eastern markets caused by the failure of forest regions closer at hand to supply adequate amounts.

It is pointed out by the report that there is enough land in the country not adapted for any other uses to produce an ample amount of timber for all the needs of the country, if it were stocked with trees. At the present time forest fires cause immense damage each year and prevent young timber which is already on the land from making its best growth or from producing timber of good quality. The only way in which an extreme shortage of lumber with all its attendant evils and restrictions on development can be avoided, the report insists, is by the adoption of a well coordinated policy of timber growing which will combine the efforts of the Federal Government, the States, and private individuals, with emphasis laid first of all on stopping the destruction wrought by forest fires.

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EASTERN STATES THREATENED BY DEPLETION OF SOFTWOODS

Government Investigates Timber Depletion and Recent Scarcity Prices.

Very Substantial Rise in Lumber Prices Was Inevitable, It Finds—Many Special Causes Present Besides Forest Depletion—Widely Distributed Forests Necessary.

New and somewhat startling facts regarding the timber supplies of the United States and the rate at which they are being exhausted were recently published by the Forest Service of the United States Department of Agriculture. Last February the United States Senate passed a resolution calling on the Secretary of Agriculture for a report as to the depletion of timber, pulpwood, and other forest resources of the country. As a result the whole forest situation has been restudied, and the conclusions reached are attracting wide attention among lumbermen and from the many industries for which wood is an important raw material. The whole subject is one in which the public is deeply interested, and according to the report the public must take action if conditions are not to become much worse.

Building Industries Seriously Affected.

That lumber has suddenly become enormously expensive in comparison with past standards, that its price has skyrocketed in the last year out of all proportion to that of commodities in general, and that both its cost and the difficulty in securing supplies at any price have affected very seriously building and many other important industries are relatively familiar facts. The shortage of paper is still more familiar. But the extent to which this has been due to the using up of our timber supplies has been a matter on which opinions have varied widely—and on which one man's opinion seemed hitherto to be about as good as another's.

Regardless of every other conceivable condition, declares the report, a very substantial rise in lumber prices would have been inevitable from general causes. In addition there were a number of special causes operative in the lumber industry to raise prices besides forest depletion—war-time disorganization, short stocks, sudden abnormal demands, and interference with production by bad weather conditions, for example. Yet after full allowance is made for all such matters, timber depletion is pronounced to have

(*Continued on page 7.*)

FARMERS MUST RECEIVE ADEQUATE PRICES.

By E. T. MEREDITH, Secretary of Agriculture.

In spite of generally unsettled conditions, unprecedented difficulty in securing labor and transportation facilities, high cost of materials, and uncertainty as to future prices for farm products, the farmers of the United States have proceeded in good faith this year to raise a crop better than the average. They are repeating, under the difficulties of readjustment, the assurance, given by their magnificent achievement during the war, that they are not to be daunted nor deterred by adverse conditions from contributing their full share to the welfare of the whole country. Looking upon the record of American farmers during these two periods of extreme stress and strain, the one following the other so closely that there was no chance for relaxation, I have absolute confidence that the future efforts of American farmers will fall nothing short of their full duty to society.

Specifically, there is a prospect of a wheat crop exceeding prewar average about one hundred million bushels, a corn crop of two and three-quarter billion bushels, or one hundred and fifty million more than prewar average; oats, one and one-third billion bushels, or one hundred and fifty million more than prewar average; barley in excess and rye more than double prewar average; potatoes exceeding five-year average; record-breaking rice and tobacco crops; hay and flaxseed exceeding five-year average; cotton, grain sorghums, and apples better than last year, and record sugar beet and sorghum syrup crops.

The cost per unit of producing these crops unquestionably was considerably greater than for any previous crop in the last half century, and business men, as well as all other elements of population, must realize that, if the record made by the farmers during the war and the period of readjustment is to be maintained and the food requirements of the Nation met, producers must receive adequate prices for their products—prices which will enable them to continue to produce, to secure a reasonable return for their efforts, and to maintain a satisfactory standard of living for themselves and for their families.

APPLE GROWERS INTERESTED IN BETTER STORAGE HOUSES

Inquiries Received by Bureau of Markets from Growers and Associations.

Bureau Has Made Careful Study of the Subject—Is Prepared to Furnish Details Regarding Methods and Cost of Construction—Causes of Past Failures.

Many inquiries regarding the construction of storage houses for apples are being received by the United States Department of Agriculture. The Bureau of Markets has made a careful study of this subject, and drawings have been prepared showing the general arrangement and essential details for the construction of common or ventilated storage houses. By writing the Bureau of Markets apple growers and associations interested can secure full details regarding methods and costs of construction, the selection of construction materials, and advice with regard to the purchase of grading and other machinery used in packing houses usually constructed in conjunction with storage houses.

Faulty Construction.

The failure of the common storage houses built years ago was due to faulty construction and insufficient ventilation, state the bureau's experts. The walls were rarely constructed tight enough to keep out moisture and rain, and the insulation was composed of so-called "dead air spaces," which were inefficient or was of sawdust which became wet and there-

fore useless. The result was that in many sections these houses fell into disuse as the apples spoiled in them.

In the last two or three years, however, many growers have become interested in providing themselves with efficient common storage houses constructed and operated to hold fruit in good condition for several months. This is particularly so in the Pacific Northwest where the growers are organized into associations and have community packing and storage houses. They are thereby enabled not only to market the fruit at a convenient time but when marketing conditions are favorable. Practically half the apples stored in Washington and Idaho for marketing in winter and early spring are held in common storage houses. Indeed, say the bureau's experts, if it had not been for common storage houses the apple growers in the Northwest would never have been able to keep pace with the increased production during the past few years, for it would have been financially impossible for them to construct adequate cold storage houses.

Storage House Important.

These advantages also obtain for the individual grower who erects a storage house. In addition, it is a fact that growers are often unable to get sufficient help to grade and pack apples during the regular harvesting season. By being able to store fruit immediately, grading and packing can be done at a later and more convenient time. Another factor is the cooling and storing of apples, which growers have come to appreciate protect the keeping qualities of the fruit. In the old days apples were permitted to remain in the orchards for weeks at a time before storing; sometimes with disastrous results.

The cheapest form of construction of ventilated storage houses in many sections is the wooden type, according to the bureau's marketing specialists. The house recommended provides insulation which has been found to give the required degree of protection against extremes of temperature. Waterproof paper is used to protect the insulation from moisture and virtually forms an envelope around the contents of the house. Ventilators are placed so that air can be circulated through every part of the structure and provided with insulated doors that can be tightly closed during the warm part of the day and opened at night.

Prickly pears can be grown at a minimum of expense, only the cost of planting and keeping down weeds being involved, although the yield, like that of most crops is in direct proportion to the care and labor bestowed.

Finds Varied Efficiency Among Farmers—Should Eliminate Low-Paying Activities

Farmers, just like other business men, vary widely in the degree of efficiency displayed in running their business. Some are able to analyze the farm business and thus to detect and eliminate the low-paying or losing enterprises. Others, lacking the knowledge of how to make a systematic analysis of the business as a whole, know that their profits are not what they ought to be, without knowing how to go about it to increase them. They may be able to find and correct the obvious errors in the small-sized farm business, but in handling a business of considerable size they often fail to spot the enterprises that are losing money for them. Such men may or may not make money, but at best they fall short of making as much as they might. A farmer may be making a large net profit on his potatoes and losing it all by keeping low-producing cows. Similarly a man may be making money on his cows and losing part of the profit on another enterprise. Hence the paramount importance of records to the farmer.

Farm Returns Studied.

Careful studies made upon a large number of farms enable the Office of Farm Management of the United States Department of Agriculture to make some interesting statements in this regard. For instance, they find that only 10 per cent—usually less—of the farms studied are managed so as to secure better-than-average returns from all four factors—size of business, yield of crops, live stock, and labor—while from 20 to 30 per cent of the farms considered have only one factor better than the average. It must be understood that no one of these factors will determine success. All four must usually be correlated by the farmer who is to get all that his business holds for him.

Advice of Experts Available.

The figures given which relate to the labor income will prove most interesting to farm employers. The analysis has reduced the labor cost of farm work to figures. An acre of hay, on an average farm, costs the labor of one man and one horse for a 10-hour day to cut, cure, and harvest it; oats, wheat, and barley, 1½ days of man labor and 3 of horse; corn for the silo, 3 man days and 5½ days for a horse; onions, sold in bunches, require about 93 days of man work to only 10 for the horse; dairy cows take 18 days of man's time every year and 2 days of horse time—so on through a list that includes about every item of farm effort. This information is valuable both in securing a balanced business and in assisting the farmer to estimate his labor needs for the coming year. It is contained in a new publication of the Department of Agriculture, bulletin 1139, A Method of Analyzing the Farm Business.

With the bulletin go blank forms for the purpose of preparing the analysis. Upon these blanks the farmer can inventory his business and then, if he feels unqlaified to abide by his own judgment upon the results shown, he may secure the advice of experts by submitting the data gathered to his county agent, or to his State agricultural college, or he may send it directly to the Department of Agriculture to have the analysis made.

FIXING HOG PRICES IN BUSHELS.

Measuring the prices of a hog in bushels of corn, instead of in dollars, is a form of applied mathematics used by the United States Department of Agriculture in keeping tab on prices of farm products. Theoretically 100 pounds of live hogs should be worth about 13 bushels of corn. The ratio varies. It is generally highest in the corn belt and lowest in New England, the far South, and the far West. At the present time the ratio is unusually narrow—that is, 100 pounds of hogs is not worth as many bushels of corn as usual. The department draws the inference that during the next 12 months hogs will advance more than corn or corn will decline more than hogs.

SERVICE CHART AGAINST CHOLERA.

In its efforts to hold down hog cholera with a reduced force, the United States Department of Agriculture is putting out a new type of poster. In a sense it is a service chart. Its picture says to the farmer, "When your hog looks like this, look out for cholera." The picture of a hog in colors shows the visible symptoms of the disease. There is printed on the poster information as to how to proceed.

Every poultry raiser should make a study of the market demands. A uniform color of eggs and flesh in poultry is desirable. A mixed flock will not produce uniform eggs or meat, and eggs from such a flock are not desirable for hatching.

Must Properly Label Bleached Flour—Adulterated If Quality Is Reduced

Bleached flour coming within the jurisdiction of the Federal Food and Drugs Act is adulterated if the bleaching has reduced the quality and strength of the flour or concealed damage or inferiority, according to a recent statement by the Bureau of Chemistry, United States Department of Agriculture, in answer to a number of inquiries regarding the attitude of the department on the bleaching of flour. Bleached flour may be shipped within the jurisdiction of the law only under the condition that the bleaching has not concealed inferiority or impaired the quality or strength of the article, and then only on condition that it is branded plainly to indicate that it has undergone a process of bleaching. Failure to label the containers to show that such flour has been bleached will subject it to a charge of misbranding.

Supreme Court Makes Ruling.

The United States Supreme Court has ruled with reference to the section of the law relating to the addition of a poisonous or deleterious ingredient that to constitute an offense an article of food sold must, by the addition of an ingredient, be rendered injurious to health, and, furthermore, that all the circumstances must be examined to determine whether the article of food has been rendered injurious. No action will be taken at the present time on the ground that bleaching introduces into the flour a substance which may be injurious to health, say the officials, provided as a result of bleaching there is not introduced into the flour such a quantity of the bleaching agent as may render it injurious as indicated in the decision of the Supreme Court.

Further Action Possible.

Should evidence later become available that the bleaching of flour introduces an ingredient in minute quantities which has the effect of rendering the article injurious to health, announcement of the fact will be made, and appropriate action taken to prevent thereafter the shipment of bleached flour within the jurisdiction of the food and drugs act.

Whether bleaching in any given shipment reduces the quality and strength of the flour or conceals damage or inferiority must be decided on the basis of the facts in each particular case.

WOOL CONSUMPTION DECLINES DURING FIRST HALF OF 1920

A drop in wool consumption of nearly 17,000,000 pounds from the average for the six months of 1920 is seen in figures for June, 1920, recently released by the Bureau of Markets, United States Department of Agriculture. According to the report 46,000,000 pounds of wool, grease wool equivalent, entered into manufacture during that month, compared with 55,000,000 pounds for the corresponding month last year. Summaries for preceding months of 1920 have shown the following amounts used: January, 72,700,000 pounds; February, 63,700,000 pounds; March, 67,900,000 pounds; April, 66,900,000 pounds; May, 58,600,000 pounds.

The sharp decrease in wool consumption is a result of the curtailment of operations which began in the textile manufacturing industry in May and became more extensive in June. Many mills have been running on a short-week schedule, while some have suspended operations entirely, the suspensions in many cases being for an indefinite period. Lack of orders, cancellations, and deferred shipments are given as primary causes for the unstable situation.

A comparison of the relative consumption of the different grades with figures for preceding months shows that fine wools not only continue to hold first place in demand, but appear to be recovering the points lost a few months ago. The percentages for June are: Fine, 31.5 per cent; one-half blood, 15 per cent; three-eighths blood, 15.5 per cent; one-quarter blood, 20.8 per cent; low, 2.9 per cent; carpet, 13.9 per cent; and grade not stated, less than one-half of 1 per cent. The percentages for May were: Fine, 30.5 per cent; one-half blood, 16.2 per cent; three-eighths blood, 16.7 per cent; one-quarter blood, 20.8 per cent; low, 3.2 per cent; carpet, 12 per cent.

Of the total reported, the amounts by conditions were: Grease wool, 33,940,086 pounds; scoured wool, 5,477,628 pounds; pulled wool, 1,262,206 pounds. Arranged according to States the figures show Massachusetts leading with a total of 14,668,380 pounds, with other States in the following order: Pennsylvania, 6,981,973 pounds; Rhode Island, 4,922,651 pounds; New Jersey, 4,075,587 pounds; New York, 3,352,566 pounds; Connecticut, Ohio, New Hampshire, and Maine approximately 1,000,000 pounds each.

LARGE SAVING TO FARMERS EFFECTED BY COOPERATIVES

Cooperative farmers' associations in the Northern and Western States, whose organization was promoted by county agents, last year effected a saving to the members of $5,434,000, according to reports made to the States Relations Service, United States Department of Agriculture. The governing principle in all activities on the part of county agents sharing in cooperative movements has been not to act as the direct business agent of the farmer or an organized group, but to assist farmers in determining what form of local organization is desirable and to secure expert assistance, when available, in organization methods. The county agent also helps guard the community against overorganization and wherever practicable advocates the use of existing agencies. The cooperative associations which the county agents have helped form have had to do both with production and distribution and include cooperative grain elevators, creameries, and live-stock selling associations.

SWINGING BACK TO BALANCE.

Cotton, following cowpeas, gave 511 pounds to the acre; cotton, following cotton, yielded only 279 pounds. The results indicate the need of a balanced system of rotation. In the above instance, according to the Office of Farm Management, United States Department of Agriculture, both plots were of similar soil and each had received 336 pounds of fertilizer to the acre. Oats, planted to follow crab grass, gave 7.1 bushels to the acre, but, coming after velvet beans, the yield was 28.6 bushels—four times as much.

Land left to "rest" does not improve as rapidly as when worked with a good cover crop. When corn was planted every three years and the land left to weeds in the intervals, the yield was only 18 bushels to each acre, but after five years of corn and crimson clover the yield increased to 50 bushels an acre.

About one-half of the yearly surplus honey production in the United States is reached by July 1, and at that time, this year, the yield of surplus honey per colony of bees was 25½ pounds, as estimated by the Bureau of Crop Estimates. This was about the same as in 1919, and about 4 pounds above the estimate for 1918 to July 1.

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OFFICE OF INFORMATION
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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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ON TRAIL OF MISBRANDERS OF INFERIOR PEST POISON

Calcium arsenate is the best poison to control the cotton boll weevil—and it must be just right or it will kill the cotton. Last year a great deal of poor calcium arsenate was on the market. Some of it contained so much water-soluble arsenic that it would kill the cotton and some of it contained so little arsenic that it would not kill the weevils. This year the United States Department of Agriculture, acting under authority of the insecticide act of 1910, is bending every effort to check up all shipments of calcium arsenate for use in control of the boll weevil. The Insecticide and Fungicide Board has sent into the South all inspectors who can reasonably be spared from other work, and it is their duty to collect samples from and aid the United States attorneys in the seizure of all shipments that are found by the board to be injurious to cotton or are inefficient or are otherwise adulterated or misbranded. Not only is the shipper subject to loss of his goods by seizure, but he is also subject to criminal prosecution for adulteration or misbranding. Seizure proceedings are conducted in the court where the goods are seized, and the criminal prosecution is brought at the point from which the goods are shipped.

The inspectors have the aid of various other branches of the Department of Agriculture in finding the trail of dangerous or inefficient calcium arsenate. The county agents are on the lookout for it. The boll-weevil laboratory at Tallulah, La., asks all farmers who buy calcium arsenate to send a sample to the laboratory, where it is analyzed. If it is found to be "off color," the nearest inspector is notified and immediately begins preparations for seizure in the event that the defect is serious enough to constitute a violation of the insecticide act.

The system of controlling the weevil by poison has been worked out by years of research, and no effort will be spared to keep it from getting a "black eye" by the use of misbranded, ineffective poison.

BULK OF WORLD'S WHEAT HARVESTED IN NINETY DAYS

Under the conditions prevailing before the World War, 35 per cent of the world's wheat crop was harvested in July, 25 per cent in August, 15 per cent in June, 7 per cent in April, 5 per cent in January, 4 per cent in May, 3 per cent each in March and December, 2 per cent in September, 1 per cent in February, and much less than 1 per cent each in October and November. The wheat harvest of the world may be regarded as beginning in December in South America, Australia, New Zealand, and South Africa, continuing through January and substantially ending in February. India then begins and increases in activity through March and April. In April harvesting operations begin in such countries as Persia, Asia Minor, and Mexico. In May activity is lessened, for then the Indian harvest has been about completed, and the harvest season is crossing the Mediterranean from north Africa to southern Europe, where harvests do not become general until June. Late in May the harvest of the United States begins. In June, July, and August about 75 per cent of the world's crop is harvested, the season progressing steadily northward during these months. By September harvest operations are nearly completed, Scotland, northern Russia, and Siberia, the United States and Canada having a little left over from August. Very little harvesting of wheat is done in October and November.

EXPERTS STUDY REINDEER AS ALASKAN MEAT SOURCE

A first-hand study of Alaskan reindeer and land fur-bearing animals is now being made by Dr. E. W. Nelson, Chief of the Biological Survey, United States Department of Agriculture, and several specialists belonging to the staff of the bureau. Dr. Nelson will spend from two to three months in Alaska, while the other specialists will be in Alaska under permanent appointment, acquiring information which will be valuable in the administration of new duties assigned to the Department of Agriculture by recent acts of Congress, namely, the improvement of reindeer herds as a source of meat in the Territory, fox farming, and the protection of land fur-bearing animals.

One of the men accompanying Dr. Nelson — Dr. Seymour Hadwen — was formerly connected with the health of animals branch of the Canadian department of agriculture. He and a new member of the staff, formerly connected with the Alaska Reindeer Service of the Department of the Interior, are devoting their attention to diseases among the reindeer. Two other members of the party, formerly grazing examiners with the Forest Service, are investigating the grazing areas of Alaska to determine the regions best suited to the reindeer.

NOTED STALLION "LUCKY" GOES TO FAMOUS KING RANCH

To further the study of the Morgan as a saddle breed, the United States Department of Agriculture has sent the 2-year-old Morgan stallion Lucky from the Morgan horse farm at Middlebury, Vt., to the Santa Gertrudis ranch at Kingsville, Tex. This is the "home ranch" of the famous King Ranch, one of the largest and best known cattle and horse breeding establishments in the United States. The Bureau of Animal Industry is paying close attention to the saddle possibilities of the Morgan horse. The King Ranch will breed Lucky to some of its high-class mares and make a careful study of the produce.

Lucky is a brown stallion 14¾ hands high and weighs 925 pounds. He was sired by Hugo. Hugo was sired by Meteor Morgan and is out of Calve by General Gates. The dam of Lucky is Eunice by General Gates and out of Caroline by Daniel Lambert. Lucky, his sire and dam, and one of his grand dams were bred at the Government farm at Middlebury. Lucky arrived safely at his new home on July 22.

Morgans have always been noted for their endurance and stamina, and have been used to some extent on the range for the production of cow ponies. The outcome of this systematic study in cooperation between the King Ranch and the Bureau of Animal Industry will be watched with much interest by horse breeders.

The average price of cotton lint to producers was 35.36 cents per pound in the cotton year 1919–20, or an increase of 23 per cent over 1918–19. Similarly, cotton seed had the average price of $67.18 per ton in 1919–20, which was 3 per cent above 1918–19.

Reports on Farm Tenancy in Wheat Belt—Various Methods of Renting in Vogue

Six distinct systems of renting exist in typical counties of the wheat belt visited by representatives of the Office of Farm Management, United States Department of Agriculture, primarily to gather information which would be helpful in acquainting tenants in the principal wheat-producing States with the renting systems other than their own in vogue in the region. Under four of the six systems the landlord is given a share of the crops only, as one-third, two-fifths, one-half, or two-thirds. A fifth system gives the landlord a half share in both crops and stock, while the sixth is a cash-rent system.

More than 400 tenants were interviewed, and records obtained in the following counties: Burton, Kans., in about the center of the winter wheat growing area of the Great Plains; Spink County, S. Dak.; and Barnes County, N. Dak., in the center of the principal spring-wheat region; Renville County, Minn., and Clay County, Nebr., both typical of farming along the border of the corn belt. In each of these counties the organization of the farms and the practice differ more or less on account of difference in geographic location.

Could Become Owners.

In only two of the localities visited, namely, Kansas and South Dakota, do a majority of the tenants think, in view of their past experience, that they can become owners in their present localities within 15 years. The owners renting additional land in all these localities, while usually admitting that a farm is not now so readily acquired by a tenant as when they bought, think that they could still become owners, were they starting to rent. From 85 to 96 per cent of the tenants expect to own farms, if not in their present locality, in some place where land costs less.

Percentages based on conditions in 1890, 1900, and 1910 show that on the whole there is a decided increase in the proportion of tenants among the farmers in the counties visited. A number of facts may be cited in partial explanation of this tendency. The average size of the farms operated by tenants varied from 202 acres in the Minnesota area to 489 acres in the North Dakota area. The income from such a farm is sufficient to maintain its owner without much personal labor on his part. He is, therefore, likely to retire and rent his land.

In each of the localities visited there were many tenants who own some land, in most cases situated where land prices are lower than where the tenant lives. Tenants who bought in their present localities completed their purchase in an average time of from 5.5 years in Minnesota to 9.9 years in Nebraska, after they started renting. More detailed information regarding renting systems in the wheat belt is contained in Department Bulletin 850, which will be sent to persons addressing a request to the United States Department of Agriculture, Washington, D. C.

One-Third Share System.

Under the one-third share system the landlord receives one-third of the grain, usually delivered from the thrashing machine, but sometimes temporarily stored in bins on the farm. He furnishes land, dwelling, barns, and usually all other farm structures, fences, material for repairs, and skilled help for making repairs, when necessary; grass seed when sown; usually he pays the real estate and road tax. The tenant furnishes the labor, work stock, machinery and tools, grain seed, and pays for twine and expenses of thrashing.

When the tenant gives half the crop as rent, the landlord in addition to what he furnishes under the one-third share system, furnishes all the grain, pays half the thrashing-machine bill, and sometimes pays for half the twine and receives half the small grain delivered at the elevators. The tenant's obligations under this system differ from those under which he gives one-third only in regard to the supply of grain seed and to the thrashing and twine bills. Where land is rented for half the wheat, corn land, and sometimes land for other grain, is farmed for one-third of the crop delivered.

If the landlord receives two-fifths of the crop, both landlord and tenant contribute to expenses in the same proportions as under the system in which the farmer receives one-third, although instead of getting one-third of the crop delivered he gets two-fifths of it delivered. None of the farms visited in North or South Dakota are rented under this system. Only one exception was found to the custom of delivering the landlord's grain where the landlord received two-fifths share.

When the crops and stock are divided equally between landlord and tenant the landlord, in addition to what he contributes under the system in which he receives one-third, owns half the productive stock, except poultry, and bears half the general farm expenses except those for labor and repairs to machinery. The tenant supplies all the labor, owns all the work stock, farm machinery, keeps the machinery in repair, and owns half the productive stock. Under this system each of the contracting parties gets one-half of all farm sales except those from poultry or work stock, all of which go to the tenant.

When farms are rented for a share of crops and stock, the lease provides whether the tenant's work stock may or may not be fed from the grain and hay owned in common and fed to other stock. No exceptions were found to the method as outlined here.

Under the renting system according to which the landlord received two-thirds of the crops and which was found only on a few Kansas farms, the landlord furnishes everything but the man power, that being the tenant's contribution. Under this system the tenant receives one-third of the grain only, while the landlord receives two-thirds of the proceeds from the sales of grain and of proceeds from the sale of stock.

Cash-Rent System.

A few of the farms in each locality, excepting the North Dakota area, were found to be renting for cash. On cash-rented farms with considerable alfalfa the tenants were satisfied, but on farms without this crop they intended to give up their leases.

In general under all of the six systems of renting described above, the landlord furnishes land, buildings, and grass seed, and pays the real-estate tax. He also supplies material for the repair of buildings and fences, and usually employs any skilled labor needed for making repairs. In all of these localities, however, land was frequently rented without buildings, and on some of the Nebraska farms visited the tenant owned all of the farm structures and fences except the dwelling, the barn, and the windmill. On the other rented farms visited in Nebraska the tenant sometimes paid a part or all of the real-estate tax.

Under all of these share-rent systems except the one according to which both stock and crop receipts are divided and the landlord gets two-thirds of the crop, all productive stock is owned by the tenant, who gets all the income derived therefrom. However, the amount of such stock is too frequently limited by his acreage of pasture and hay land, by the amount of corn or roughage

point is reached at

allowed to grow, and by the shelter that is provided for such stock.

On the share-rented farms the use of hay land was usually paid for in cash but was sometimes given free to the tenant. Frequently it was rented for a share of the crop, and in some cases there was no hay land on the farm. Pasture was sometimes free to the tenant, but in many cases was paid for in cash. Sometimes the farm pasture was used in common by both landlord and tenant, and in other cases there was no pasture.

Several minor factors not mentioned heretofore exert an important influence in the relation of landlord and tenant. Among these are the distance from the farm to market, the value of the land, and the value of the farm buildings.

In the Kansas area the average distance from the market to the farms visited was 4.5 miles; in the Nebraska area 3.6 miles; in the South Dakota area 4.4 miles; in the North Dakota area 5 miles; and in the Minnesota area 5.6 miles. Very few farms were more than 9 miles from the market. The share of the crop given in no case appears to differ on account of the distance to market, except that the average distance to market of the farms renting for two-fifths share is less than the average distance of those renting for one-third share.

Verbal and Written Leases.

In both the Kansas and Nebraska areas there were more verbal than written leases. In South Dakota written and verbal leases were about equal in number, and in North Dakota and Minnesota most leases were written. There was a greater percentage of parent landlords in Kansas, Nebraska, and South Dakota than in the other States, and the fact that their leases were nearly always verbal accounts in part for the preponderance of this type of agreement in these States.

BOYS WIN OVER THEIR ELDERS.

It is estimated that only 3 per cent of the cattle in the United States are registered, and experts say that an increase of 2 per cent accomplished in from 5 to 10 years is a mark well worth aiming at.

Out in Ustick, near Boise City, the boys have shattered this record, according to a report brought in by a United States Department of Agriculture field worker who recently visited the community. These boys, acting upon their own initiative, and aided by agents of the Department and the State college of agriculture, bought 19 head of purebred stock, thus increasing the total for their tory, ... per cent.

Warns Fruit and Vegetable Shippers—Must Mark Quantity on Containers

Fruits and vegetables in package form when shipped into interstate commerce should bear a plain and conspicuous statement of the quantity of the contents in each package, according to a statement made by officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of the Federal food and drugs act. Instructions have been issued showing how various fruits and vegetables in different styles of packages may be marked in order to comply fully with the net weight amendment to the law, and also showing what shipments of vegetables as ordinarily marketed are exempt from the net weight provisions. These instructions have been distributed widely among fruit and vegetable growers and shippers.

The bulk of the fruits and vegetables now shipped into interstate commerce are marked in accordance with the law, say officials, but some shippers have overlooked or are disregarding this provision of the law. Since this amendment has been in effect for six years and every opportunity has been given to the trade to get in line with its provisions, it is the opinion of the officials that there is now no excuse for any shipper failing to mark the quantity of the contents on packages of fruits and vegetables shipped within the jurisdiction of the law.

Markings Required.

Fruits and vegetables in baskets, hampers, drums, cartons, boxes, crates, and barrels may in general be marked by either weight or dry measure, or when packed in barrels may be marked in terms of the United States standard barrel and its subdivisions of third, half, or three-quarters. Statements of dry measure should be in terms of the United States standard bushel and its customary subdivisions of half-bushel, pecks, quarts, pints, or half-pints. If the quantity of the contents be stated by weight or measure, it should be marked in terms of the largest unit contained in the package, except that in the case of an article with respect to which there exists a definite trade custom for marking the quantity of the article in terms of fractional parts of larger units, it may be so marked in accordance with the custom. For example, if the package contains a pound, or pounds, and a fraction of a pound, the contents should be expressed in terms of pounds and fractions thereof, or of pounds and ounces and not merely in ounces, unless there is a definite trade custom to the contrary.

Crates or "flats" containing small open containers of apricots, berries, currants, cherries, grapes, peaches, plums prunes, peppers, tomatoes, and the like should be marked on the outside of the crate or "flat" with the number of small containers and the quantity of the contents of each. When the crates are so marked it is not necessary to mark the quantity of contents on the small open containers within the crates, but if the quantity of contents is marked on the small open containers the marking must be correct.

Exempt for the Present.

It is not necessary for the present and until further notice to mark the quantity of contents on the following fruits and vegetables when marketed in the manner indicated: Asparagus in boxes and cases; beets with tops, bunched, in drums and hampers; cabbages in crates; cantaloupes and casabas in crates and baskets; carrots with tops, bunched, in drums and hampers; cauliflower in crates and hampers; celery in boxes and crates; eggplant commonly wrapped in paper and packed in crates; kale in barrels, baskets, and hampers; lettuce in barrels, drums, baskets, and hampers; onions with tops, bunched, in drums and hampers; pineapples in crates; radishes, bunched, in drums and hampers; romaine in hampers; spinach in barrels, baskets, and hampers; turnips with tops in drums and hampers.

Federal inspectors have been instructed to examine interstate shipments of fruits and vegetables to see that the quantity of contents is marked in accordance with the law. Copies of Item 253 on the "Labeling of Various Packages of Fruits and Vegetables with the Quantity of the Contents" will be sent free upon application to the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

STRONG FOR PUREBREDS.

From Gage County, Nebr., comes the report that 83 farmers there have enrolled in the purebred-sires-only campaign and are using only purebred sires to head their herds of cattle, hogs, sheep, and poultry The United States Department of Agriculture and local organizations are cooperating to extend the movement.

EASTERN STATES THREATENED BY DEPLETION OF SOFTWOODS

(*Continued from page 1.*)

been an important contributing cause of excessive prices of forest products.

Not only so, but what has happened hitherto is only a sort of foretaste of what is in store for us, according to the report, if we hold on our present course. For in seeking to untangle the complex influences that have combined to send shooting upward the prices of lumber, paper, turpentine, rosin, and other products, the Forest Service experts have gone deeply into the question of what we have left in our forests, how fast it is going, and what regrowth is taking place. It is in the facts and estimates thus disclosed that the most novel and most striking aspects of the study are revealed.

Facts About Depletion.

A dozen years ago, while Roosevelt was President, the country became suddenly alarmed on the subject of its forests. Out of this came the conservation movement. A national conservation commission was appointed by the President, and the governors of all the States and other leaders of thought and action were assembled at the White House to take counsel together regarding our natural resources and their relation to the public welfare. At that White House conference it was stated that we were using up our timber supplies three times as fast as they were being renewed by growth.

The correctness of this estimate came later to be doubted. But now the Forest Service declares we are losing from the present stand more than four times what growth replaces—and still worse, that our saw timber, the biggest and most valuable timber that we have, and the kind that we need most and that takes longest to replace, is being cut and destroyed five and one-half times as fast as it is produced.

Yet even this does not tell the whole story. Of saw timber consumed, through cutting or loss by fire and similar destructive agencies, between two-thirds and three-fourths comes from our virgin stands in which no regrowth is possible except as the present stand is removed to make place for a new. At the same time we are losing our second-growth saw timber more than one and one-half times as fast as it is being grown, while the material still too small for saw timber is going three and one-half times as fast as it is produced. Thus while eating up for the bulk of our demands what we may call our inherited capital—the virgin timber that we found in our primeval forests—we are also biting into the supplies on which replacement depends. Obviously, as the depletion of virgin supplies advances the whole process will be accelerated unless we radically mend our ways.

Idle Land Wasteful.

Yet we still have left one-sixth of our original virgin forest area, while of forest land of all kinds, including culled, burned, and cut-over areas, we have a little more than half the original amount. Something like 463,000,000 acres all told, good, middling, and poor. But the poor is very poor, indeed—a matter of 81,000,000 acres or so has to be rated as unproductive waste, while a hundred and thirty-odd million acres are what the Forest Service classes as "cordwood areas," or land on which there is not enough saw timber to permit of lumbering. Some of this will have saw timber on it in good time if we let what is there now grow up. But a great deal of it is like a garden full mostly of weeds.

TREES TO CUT FOR IMPROVING THE WOODS.

Trees which are well suited for firewood, and the removal of which will be an improvement to the remaining trees in the stand.

Trees which have been overtopped by others and have had their growth stunted.

Diseased trees, or trees seriously injured by insect attacks, or trees extremely liable to such injury; for example, chestnut in the region subject to blight or birch in the gipsy-moth area.

Badly fire-scarred trees.

Trees of the less valuable species, such as beech, birch, black oak, blackjack oak, or black gum, crowding the more valuable sugar maple, white or short-leaf pines, yellow poplar, or white oak.

Crooked trees and large-crowned, short-boled trees which will not make good lumber and which are crowding or overtopping others.

Slow-growing trees crowding fast-growing species of equal value.

Sound dead trees both standing and down.

The heart of our forest problem, according to the report, is to get the idle or partly idle land to work. If all the land suitable for forest production were growing reasonably good crops of trees there would be no forest problem for the country.

It might seem that we are reasonably safe as it is against an immediate shortage, since the report estimates the total volume of standing timber in the country at 746 billion cubic feet, and our annual cut and loss combined at 26 billion. But the Forest Service considers that more importance attaches at the present time to where the timber is than to the aggregate amount. It is regional depletion, the report says, that has combined with other causes to put the price of lumber out of sight for many users.

The trend of lumber prices of the leading softwood species since 1905 is graphically brought out in the report. From 1907 to 1915 southern yellow pine, Douglas fir from the Pacific coast, and Inland Empire softwoods on the whole declined, but between 1915 and 1920 all flew upward practically together, and to unexampled heights. Last March both Douglas fir and yellow pine had reached prices between three and four times those of 1915. The general market is now supplied with its construction material chiefly from these three sources.

The hardwoods—oak, ash, hickory, birch, beech, maple, gum, etc.—are specialty woods. Pine, fir, spruce, hemlock, and other softwoods are the main dependence of the lumber market for general purposes. Of the 746 billion cubic feet of standing timber, only 485 billion cubic feet is saw timber, and of the saw timber the hardwoods form 21 per cent. Of the softwood supplies of saw timber the East has less than one-fourth, though it consumes the bulk of the cut. Thus the eastern markets are becoming more and more dependent on the forests of the far West, the last remaining great reservoir of virgin timber.

Exhaustion Threatening.

The softwood saw timber of the Northeast was badly depleted long ago. In 1907, nevertheless, the total lumber cut of New England was over 3 billion board feet, and about 7 per cent of the total for the country. But in 1918 it was less than 1½ billion feet, and within 10 years will probably drop to about 1 billion feet. New York, which in 1850 ranked first among the States in lumber cut, now contributes only 1 per cent of the total. In Pennsylvania the Pittsburgh district alone uses more lumber than is cut in the entire State.

The Lake States succeeded the Northeast as the main producing center of the country's softwood lumber supplies, but yielded the lead to the South before 1900. By 1925 it is estimated that the local consumption will be equal to the local production. And now the South is yielding to the West the dominating position with respect to prices which it has held in the great central markets for more than 20 years.

Four successive price levels have marked the course of lumber prices, and each new price level has meant arrival at a time when a new region becomes the controlling factor. Regional depletion alters the relation of timber supply and demand until a point is reached at

which lumber from a more distant region can compete, notwithstanding the higher transportation cost. When New Yorkers got their lumber from their own pine forests, transportation costs were about $1 per thousand, and upper grades cost wholesale from $20 to $30 per thousand. When they became dependent on the Lake States transportation costs became about $5 per thousand, and softwood uppers ranged between $34 and $40. The cost to-day of importing lumber into New York from the South is approximately $9 per thousand, and from the Pacific coast $20.

But it is not merely that the consumer must pay the cost of hauling the lumber from more and more distant regions. In the absence of nearby supplies to steady the market many things may happen. In recent months consumers in the Ohio Valley have paid in some instances for lumber from Oregon more than $50 above the Oregon local price for the same material in addition to the freight bill.

Distributed Forests Necessary.

In short, there may be plenty of timber in the far Northwest, and yet famine conditions and prices in the Northeast and Central States. There should be producing forests in all the great forest regions. Widely distributed forests are necessary to our welfare, and regional depletion is the present outstanding menace and already largely accomplished fact. This is the central finding of the report.

The remedy is not far to seek. We must take the back track and, instead of destroying our forests, restore them. Fortunately, that is something which nature will largely take care of if given a fair chance. That is primarily, though not wholly, a matter of protecting all forest lands against fires—cut-over lands as well as the merchantable timber. If the Nation, the States, and the private owners will promptly join hands for this task, the worst evils of forest depletion may still be averted. A proposal of legislation to provide for this is the first and most important recommendation of the report.

For 10 leading crops of 1919 remaining in farmers' hands, the average price received by farmers in every month of this calendar year to and including July was above the average of the corresponding month of last year. If the average of the five years 1910–1914 is taken as 100 for each month, the average price for the seven months of January to July in 1920 is 21 per cent above that of the same period in 1919.

Possible to Grow Currant Grapes Here—Big Importations Now Made From Greece

The best varieties of currant grapes can be made to produce regular and good crops in the raisin-grape sections of the United States. It was formerly believed that these grapes, native in Greece, could not be successfully grown in this country. The grape specialists of the United States Department of Agriculture have demonstrated, however, that when certain precautions are observed, there is no real difficulty in securing good yields.

Ripen Very Early.

The United States annually imports about 34,000,000 pounds of dried currants from Greece. This supply, the specialists say, can be produced in this country largely in wine-grape regions of California and the product will be superior to the imported one.

An important feature is that the currant grapes ripen very early. They can be dried and put away before the earliest rains occur in districts where other raisin varieties ripen after such rains begin. In present raisin sections they can be grown as an advance crop and cured and stored by the time other raisin grapes ripen. The same labor, therefore, can be employed for the two crops, and the result will be a more evenly distributed labor requirement.

There were some knotty problems in connection with growing the choice strains of currant grapes in this country, but they have been to a considerable extent solved. The two essential points are that currant grapes must be grafted on phylloxera-resistant stacks congenial to them and the vines must be thoroughly ringed while they are in bloom. The latter operation is accomplished by making two parallel incisions through the bark and cambium layer entirely around the trunks, arms, or canes of the vines, and thoroughly removing the bark and cambium between the two parallel cuts. Unless the ringing is done at the proper time the blooms fall and only a partial crop of grapes is set. Details of ringing practice are given in Department Bulletin No. 856 just issued.

Suggestions for Drying.

Drying experiments made by the department specialists in the Fresno cooperative experiment vineyard show that the grapes can be satisfactorily dried on wooden trays and that the objectionable Greek method of drying them on a sun-baked paste of cow manure spread on the ground is not necessary. The fruit should be exposed to the sun ordinarily only one and never longer than two days. After one or two days' exposure to the sun the trays are stacked one on top of another with wooden strips between and the drying process is completed in about 15 days.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended July 31, 1920:

Pop Corn for the Market. (Revised edition.) Farmers' Bulletin 554.

Tobacco Culture. (Revised edition.) Farmers' Bulletin 571.

Food for Young Children. (Revised edition.) Farmers' Bulletin 717.

Standard Varieties of Chickens. (Revised edition.) Farmers' Bulletin 898.

Hog Lice and Hog Mange. Farmers' Bulletin 1085.

Influence of Tractor on Use of Horses. Farmers' Bulletin 1093.

Control of Aphids Injurious to Orchard Fruits, Currant, Gooseberry, and Grape. Farmers' Bulletin 1128.

Tile-Trenching Machinery. Farmers' Bulletin 1131.

A Method of Analyzing the Farm Business. Farmers' Bulletin 1139.

Soy Bean. Department Circular 120.

Velvet Beans. Department Circular 121.

An Economic Study of Small Farms near Washington, D. C. Department Bulletin 848.

Organization and Management of Farms in Pennsylvania. Department Bulletin 853.

Cotton Boll Weevil Control by the Use of Poison. Department Bulletin 875.

The Toll of Tuberculosis in Live Stock. Yearbook Separate 810.

Copies of these publicatins may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 554; Department Bulletin 875; Department Circular 120.

It is to your best interest to put your Liberty Bond interest in War Savings Stamps.

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SECRETARY MEREDITH SPEAKS TO MARYLAND CLUB MEMBERS

Receives Degree of Doctor of Agriculture from University of Maryland.

President Woods of the University Makes Presentation Before Boy and Girl Club Members—Secretary Tells Prize Winners to Set Example for Others.

In the presence of 200 boy and girl prize winners from Maryland farms, Secretary of Agriculture Edwin T. Meredith last week received the degree of doctor of agriculture conferred by Dr. A. F. Woods, president of the University of Maryland. After a short reply to President Woods's speech of presentation, the Secretary made the following address to the boys and girls:

"You, of course, know of the work that you have done in Maryland, so that it is not necessary for me to recite your record here. You are to be congratulated, however, in having in Maryland an agricultural college and other agencies which are intensely interested in the work that you are doing as members of the boys' and girls' clubs. I say this sincerely and honestly, not because you are here, but because I believe that there is no work along agricultural lines that is more far-reaching or will bring greater results in the long run than that which you are doing in the study of agriculture. It is not my purpose to talk to you at length, or to lecture you, because it is my wish that you should have as much time as possible to go through the department and to see the equipment which is here to serve you and the older men and women of this country as well. But there are two thoughts I would like to leave with you.

"One Thousand Years' Experience."

"On other occasions I have talked about 'one thousand years' experience.' There is no one of us, of course, who can hope by his own efforts to secure one thousand years of actual, personal experience in a lifetime, but if we will profit by the experience of others, of some farmer, some member of the agricultural college, some expert in the Department of Agriculture, or if we will read a bulletin prepared by some one who has devoted his life to a certain subject, it may take you only one hour or an hour and a half, in this way, to secure information which it has taken another ten years to learn. By taking in the same way the experience of another man or woman, you may secure twenty years' experience on that particular subject. In other words, you are taking advantage of the life work of many men and women and you can thus have, in effect, so far as your own work and your own knowledge is concerned, a 'thousand years' experience'; and it is the man with the largest experience who is the most successful. That man is best educated, as some one has said, who knows the most of the experiences of others. One thought I wish to leave with you, therefore, is that you get all the experience you can in this work of agriculture by profiting by the experience of others.

"I wish also to imbue you, if I can, with the value of knowledge. A young man with whom I came in contact recently was anxious to get into business, to get 'started,' as he said, in his life work, but he did not have the equipment, education, or experience of other men. He decided later to take a year's course in a school where men experienced in the line he expected to take up told their experiences. At the end of the year he said, 'The one big thing that I value, the

(Continued on page 3.)

HELP PREVENT WOODS FIRES.

Be sure your match is out before throwing it away.

Don't throw away burning tobacco.

Choose a safe place and make your camp fire small.

Put out your fire with water and then cover it with earth.

Don't make large brush heaps. Choose a still day for burning and plow furrows to protect near-by woods.

BE CAREFUL WITH FIRE.

FEDERAL AID BIG STIMULUS TO HIGHWAY CONSTRUCTION

Operations Begun Thus Far Aggregate More Than 29,000 Miles.

Federal Government Cooperates With the States on a Fifty-Fifty Basis as to Costs—Leads to Building of Most Durable Types of Roads Over All the Country.

The unprecedented stimulus given highway construction in the United States in the four years that have passed since the Federal Government entered upon its policy of aiding road improvement is shown by the fact that road operations under the Federal aid road act thus far initiated aggregate in length nine times the distance from New York to San Francisco, according to Thomas H. MacDonald, Chief of the Bureau of Public Roads, United States Department of Agriculture. The Federal Government's share in this stupendous undertaking is greater than the cost of the Panama Canal. The participation of the National Government in highway improvement marked a departure from a policy which had been followed for nearly a century. Federal cooperation with the States on approximately a "50-50" basis has counted more than any other factor, says Mr. MacDonald, in initiating highway construction that is being carried on under adequate supervision, and in accord with a program coordinating local, State, and national needs.

Highways of Durable Types.

Second only in importance to the size of the present road-building program is the excellence of the character of the roads being built. Sixty per cent of the total allotment of Federal funds which has been approved to date will be spent for roads of such durable types as bituminous concrete, Portland cement concrete, and vitrified brick. These roads, when built, will increase by 7,600 miles the total of 14,400 miles of roads of this class which existed in the United States before the Federal-aid road law was

passed. But these figures by no means represent the total mileage affected.

In 1915 the total expenditure for roads and bridges by all the States and local governments was $267,000,000, while this year the estimated funds available for main road construction are nearly three times that amount, or $633,000,000. In all, Federal funds to the amount of $266,750,000 have been apportioned among 48 States without a suggestion of favoritism—so adequate are the provisions for a just apportionment.

Far-Reaching Results.

One of the early and most far-reaching results directly attributable to the adoption of the Federal-aid program was the creation of adequate State highway departments in 17 States which previously had either no State department, or departments insufficiently equipped. Within one year after the passage of the Federal-aid road act more constructive State highway legislation was placed upon the statute books than had ever been enacted in a similar period in the history of the country.

The insistence of the Government upon the construction of Federal-aid roads under the supervision of engineers of the State departments has resulted in placing a much larger proportion of road work under skilled direction. In 1915, the year before the Federal-aid act was passed, only 30 per cent of the money for roads and bridges built in the United States was expended under the supervision of State highway departments. This year these departments will exercise control over fully 80 per cent of the large sums that will be spent for road building.

The Federal Government's present program of highway improvement is the result of two acts: The Federal-aid road act, signed by the President July 11, 1916, and provisions in the Post-Office appropriation bill for 1920, signed February 28, 1919, containing an amendment to the original Federal-air road act. The original appropriation of $75,000,000 was made available for rural post roads in installments at the rate of $5,000,000 for the fiscal year ending June 30, 1917; $10,000,000 for the fiscal year 1918; $15,000,000 for the year 1919; $20,000,000 for the year 1920; and $25,000,000 for the fiscal year ending June, 1921. Ten million dollars for forest roads was made available at the rate of $1,000,000 a year after July 1, 1916. The apportionment of the post-road appropriations of the States, after deducting the administrative fund, which must not exceed 3 per cent, is based upon area, population, and mileage of rural delivery and star routes in each State. Each of these factors has a weight of one-third.

Federal Activities Broadened.

Three months after the signing of the armistice the Post-Office appropriation bill for 1920 became a law. One of the important amendments which it contained provided that the term "rural post roads," as used in the earlier act, was to be construed to mean "any public road a portion of which is now used or can be used or forms a connecting link not to exceed ten miles in length of any road or roads now or hereafter used in the transportation of the United States mails." The law also changed a limitation to the effect that the Government expenditure could not be in excess of $10,000 per mile (exclusive of bridges of more than 20 feet clear span) by raising the maximum to $20,000 per mile. This Post-Office appropriation bill carried an additional appropriation of $200,000,000 for the construction of Federal-aid roads and $9,000,000 additional for the construction and maintenance of roads and trails in the national forests.

All of these Federal funds may be expended only for construction and must not exceed 50 per cent of the value of the roads. In other words, the States, either directly or through county or other government units, are required to bear something more than half of the total cost of their road improvement.

Under the law the Secretary of Agriculture is charged with the administration of the Federal-aid act. He has assigned the details of administration to the Chief of the Bureau of Public Roads, a branch of the department which is considered to be in closer touch with the highway situation and requirements of the country as a whole than any other agency in the United States.

States Must Initiate Projects.

The Federal aid act requires that road projects for Federal aid be initiated by the States. As a first step a statement is forwarded to the district engineer of the Bureau of Public Roads, announcing in effect that the State proposes to build a piece of road of a certain type and length in a certain location. This notice, known as a "project statement," is accompanied by an estimate of cost. The project statement is examined by the district engineer to determine whether the project complies with the Federal-aid road act. If his decision is favorable he forwards the statement to the Washington office with his recommendation. There it is examined by the chief engineer and his assistants, and if the latter concurs in the recommendation of the district engineer the project is placed before the Secretary of Agriculture for his approval. Until the Secretary has acted, no further action is taken by the State. Over half of the projects handled are passed by district officers in an average of five days—an illustration of the manner in which work can be expedited even where a large organization and complex procedure are involved.

Big Mileage Approved.

Up to June 30, 1920, 2,985 projects involving a total of 29,319 miles of road had been approved by the Secretary of Agriculture. The preliminary estimate of the cost of these projects is approximately $384,900,000, of which approximately $163,841,000 will be approved as Federal aid. On the same date 2,116 projects, representing approximately 15,944 miles, had either been completed or were under construction. The estimated total cost of these projects in various stages of construction and completed is $200,000,000. The total cost of Federal-aid work approved by the Secretary in the 19 months subsequent to the signing of the armistice, and prior to July 1, 1920, which is approximately $330,000,000, exceeded by $63,000,000 the cost of all roads and bridge work done by States and counties in this country in 1915. The value of the work completed during that period amounted to $60,000,000, a rate of construction equalling that of the Panama Canal.

AIDS "FARMERS' MUTUALS" WITH ORGANIZATION ADVICE

Assistance has been given a large number of farmers' mutual fire insurance companies by the United States Department of Agriculture by suggesting to these organizations suitable articles of incorporation, by-laws, and application and policy forms. In connection with the by-laws recommended by the department's specialists a classification of risks has been prepared which has received the indorsement of the National Association of Mutual Insurance Companies. Already several companies have adopted this classification. A set of by-laws prepared by the department for one of the more progressive farmers' mutual wind-storm insurance companies is now recognized as a model among leading men in this particular field of agricultural insurance. A simple system of records for farmers mutual insurance companies prepared by the department within recent months is already being used by seven concerns and more than a score of other companies indicate by correspondence that they are contemplating adopting this system of records.

Seek Ways to Aid Agriculture in Hawaii—Greater Variety of Crops Found Desirable

The Hawaiian Islands depend entirely too much upon the production of sugar and should introduce a greater variety of crops in order that the islands may be more independent of the outside world, from an agricultural standpoint, according to the United States Department of Agriculture, which maintains an experiment station in the islands. In normal times, it is contended, if a greater variety of crops were grown they would be available for export either in the raw or manufactured state. In case of a blockade, or any other interruption of commerce, these crops could be used readily to feed the local population.

Learned Better Methods.

What can be done in the matter of a sounder agricultural practice was demonstrated during the war, when, with the aid of the territorial county-agent system then in effect (but now discontinued for lack of funds), the mixed population of the islands learned much regarding better farming methods. Furthermore, the experiment station has cooperated with representatives of the several military posts providing seeds and plants for gardens of the various companies, thereby showing the value of up-to-date gardening methods as applied to island conditions.

The work of the experiment station during the past year is reviewed in a report containing 73 pages, which has just been published by the United States Department of Agriculture. It surveys the great variety of agricultural investigations carried on during the year and cites the results of experiments with many sorts of native and introduced tropical fruits and nuts, besides such products as coffee, vanilla, corn, cassava, beans, sweet potatoes, taro, etc.

The station has given special attention to increasing the production of feed for live stock. Recently there were exhibited at a fair mixed feeds which contained 50 per cent or more of home grown products, such as pigeon pea meal, alfalfa meal, canetop hay, waste molasses, cracked corn, and other products.

A rather striking illustration of the work of the station in demonstrating agricultural possibilities has to do with growing pigeon peas. Investigations which had been in progress at the station for some time resulted in the planting of a 15-acre field three years ago. Over a hundred other forage crops had previously been tested but the pigeon pea seems to combine more good points with fewer unfavorable characteristics than any of the other crops. The field was cropped from three to five times for seed and forage. The product was cured as hay which in turn was made into meal and fed to all classes of live stock. As a result of this practical demonstration by the experiment station, it is estimated that 1,000 acres were planted to pigeon peas by farmers during the past two years, most of the seed used having been bred by the station.

Recovering Caffein.

The Hawaii station, in cooperation with the Bureau of Chemistry, is investigating the practicability of recovering caffein from various by-products of the coffee industry as carried on in Hawaii. These include a large amount of pulp, prunings and the like, which are now mainly used for fuel or fertilizer. If the recovery of caffein is found practicable and profitable, the discovery will have an important bearing on the coffee industry, since about 4,000,000 pounds of dried coffee pulp, parchment, and skins are now available annually, while prunings probably amount to 2,000,000 pounds annually.

These are but two instances selected from a large number of investigations discussed in the annual report.

Persons desiring copies of this report may secure the same free by addressing a request to the United States Department of Agriculture, Washington, D. C.

SECRETARY MEREDITH SPEAKS TO MARYLAND CLUB MEMBERS

(Continued from page 1.)

one thing that is worth more to me than all the other things I have learned, is the value of learning.'

"In other words, he found out how little he knew, how little of other men's experience he actually had, and all through his life now he will appreciate the value of knowing what other men have learned. That is what I would like to have you girls and boys understand, that if you will take advantage of another man's experience you do not need to make his mistakes. It is essential that this group of prize winners—and you are entitled to be proud, and I know that you are proud of your record—should set the example for others. You are going to be the leaders in agriculture in your several communities. It is highly important, therefore, that you should profit by the experience of others and should appreciate the value of learning and the value of knowing the right thing to do in order that you may set a proper example. You have made a record. You have won this year and certainly you must work, and study, and profit by experience, in order that you may maintain that record and go on and on in this work which is so well worth while.

Experience of Others Helpful.

"Those, then, are the two thoughts that I want to leave with you. Get a thousand years' experience, if you can, by taking advantage of the experience of others because it will certainly help you. If you were going to build a house, you would engage an architect. If you were ill, you would call a doctor. If you were going into the mining business, you would employ an engineer. The same principle applies to agriculture. You men, you boys and girls, must be the engineers, the architects, the directors of agriculture in your communities, because you have demonstrated by your prize winning your ability to do this thing. By having wide knowledge, you will be better able to accomplish success for yourselves and to be helpful to others by example and direction.

"I thank you for coming here, and I am grateful to President Woods and all others interested in bringing you to us. You have paid a compliment to the Department of Agriculture and to every one connected with it. We are all glad to have you here, and if there is any way in which we can serve you as individuals, or your college, or those interested in club work in your State, now, or in the future, it will be a pleasure for us to do so."

TELLS HOW TO POISON BOLL WEEVIL.

The first complete discussion of cotton boll-weevil control by the use of poison has just been issued by the United States Department of Agriculture, as Department Bulletin 875. A good deal of information on the use of powdered calcium arsenate for controlling the boll weevil has been previously issued in fragmentary form from time to time. All of this, together with recent improvements and developments, is brought together in the new bulletin. Not enough copies are available for unlimited distribution, but any person directly interested in control of the boll weevil may have a copy free on application to the United States Department of Agriculture, Washington, D. C.

Weekly News Letter

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The News Letter is a news service, and editors are invited to reprint from it with or without credit.

MAY LEAD TO PREVENTION OF POTATO MOSAIC DISEASE

Prevention of mosaic disease of Irish potatoes, which decreases yields of affected potatoes 20 to 50 per cent, and for which no satisfactory control measures have been generally adopted, now appears possible as a result of a series of investigations conducted in Maine by specialists of the United States Department of Agriculture and the Maine Agricultural Experiment Station.

The essential points are that mosaic is carried over from season to season and from farm to farm by planting potatoes from diseased hills. The spread of mosaic in a field is due mainly to aphids or plant lice, which feed upon mosaic plants and then upon healthy ones. The potatoes thus inoculated may show the disease very soon, or it may not appear until the following season, when the progeny will develop mosaic. Mosaic may be spread also by rubbing crushed leaves of diseased plants upon healthy ones, and by injections of the juice of diseased plants. It has not been spread by the seed-cutting knife.

The percentage of diseased plants in a field may not change greatly from year to year, but the tendency is for the mosaic to increase, particularly when aphids are abundant. Seed from hills that grew near mosaic hills are more likely to yield mosaic progeny, and more so if the parent hill contains only two or three tubers, and as the relative size of the tuber in the parent hill is greater and as the seed-piece is nearer the bud end or is larger.

The conclusions drawn from the experiments are that the first essential is to secure seed stock from fields entirely free from mosaic, or as nearly so as can be found. These potatoes should be isolated from all fields where mosaic occurs, and every effort should be made to prevent attacks by aphids. Thus far Colorado beetles and flea beetles have not been found to transmit mosaic, nor does the disease live over in the soil except in volunteer tubers.

D. A. SPENCER APPOINTED SENIOR ANIMAL HUSBANDMAN

The Bureau of Animal Industry announces the appointment by the Secretary of Agriculture of D. A. Spencer, as senior animal husbandman in charge of the sheep and goat investigations of the bureau, to succeed F. R. Marshall who resigned in March to accept the position of secretary of the National Wool Growers' Association. Mr. Spencer is a native of Michigan and a graduate of the Michigan Agricultural College in the class of 1911. After graduation he spent two years as instructor in animal husbandry in the Michigan Agricultural College, and from 1914 to 1918 he was instructor and assistant professor in animal husbandry on the staff of the Oklahoma Agricultural and Mechanical College. On April 1, 1918, he entered the service of the Bureau of Animal Industry in cooperation with the Missouri College of Agriculture as sheep specialist for that State. He has been very actively engaged in the extension of the sheep industry, particularly in the educational work pertaining to the care of sheep and wool on farms, and in the organization of wool pools. The research work in sheep husbandry, which was developed to such a high state of efficiency by Mr. Marshall, will be continued without material change.

URGES WIDER USE OF ALSIKE AS A COVER CROP THIS YEAR

The success of alsike clover as a cover crop last winter in certain sections of New Jersey leads crop specialists of the United States Department of Agriculture to recommend its wider use this year. Until further experiments have been made, however, they are unwilling to make any "sweeping" claims for it as a competitor of crimson clover. The success met with in New Jersey, they say, well warrants them in advising farmers to do a little experimenting for themselves.

It is doubtful, the specialists say, that it would be safe to sow alsike clover as late as the 15th of August in sections north of Pennsylvania, Illinois, and Indiana. The young plants would probably not make enough growth to enable them to live through the winter, although alsike clover itself, when well established, is perfectly hardy as far as the extreme northern boundaries of the United States and in Canada. Alsike clover should, however, do well sown early in August in the States along the Atlantic seaboard; that is, New Jersey and Delaware. Alsike should be planted early in August for spring plowing under.

The cost of alsike seed, it is said, is relatively lower than that of red clover, because the seed is small and less needs to be sown per acre. While the seed cost is higher than that for crimson clover, it may prove more reliably winter hardy, and so have an advantage over the crimson clover, which so often winterkills.

ADOPTS NEW DISTRIBUTION SYSTEM TO CONSERVE PAPER

A single page leaflet, entitled "New Light on the Forestry Question," carrying the announcement of two new publications by the United States Department of Agriculture, has been mailed to several thousand persons commonly interested in Department of Agriculture activities. This method of determining what persons will be glad to receive publications about to be issued is in accord with the policy of the department which endeavors to limit the number of copies of bulletins, circulars, etc., distributed to persons who believe they will be directly benefited by them.

This particular leaflet calls attention to the full report on forestry conditions in this country which the Forest Service has prepared in response to a resolution passed by the Senate. It also states that a summary of this report in the form of a department bulletin has been prepared. The latter can be had free by addressing a request to the United States Department of Agriculture, Washington, D. C., while the former—which is much more exhaustive and, in addition to general facts, contains a large amount of information relating particularly to individual wood-using industries—can be obtained for 25 cents per copy (stamps not accepted) by sending the same to the Superintendent of Documents, Government Printing Office, Washington, D. C. Both of these publications contain startling evidence as to the forest depletion which is going on in this country at an increasingly rapid rate. They also set forth the program which the Forest Service is advocating as the only practical means of remedying the present evil.

SOUTHERN TOWN MAKES MERRY OVER NEW BULL ASSOCIATION

Dairy Division Field Man Reports on Gala Day at Starkville, Miss.

Enthusiastic Reception Given Newly Purchased Bulls—Associations Have Few Members But Many Cows—Expect Benefits from Improved Production.

There is enthusiasm in Starkville, Miss., over the new bull associations there, writes the Dairy Division field man. Oktibbeha County, in which Starkville is located, is one of the leading Jersey centers of the South. It has held this position since 1880, when one or two progressive men began to breed fine Jersey cattle, and to introduce new forage crops which would enable farmers in that region to grow feed for their live stock. Among these introductions were paspalum, clover, Johnson grass, and alfalfa. Hundreds of carloads of fine cattle have been shipped from Starkville to other parts of the country both South and North.

Start Demonstration Creamery.

Several years ago the State agricultural college at Starkville started a demonstration creamery. This furnished a market for butterfat, and led to the building of creameries in many communities, sharpening the interest in dairying throughout the whole State.

Recently, still another forward step was taken, in the organization of bull associations. There are now 11 such organizations in different parts of Mississippi. Two associations have been started at Starkville, each of which is fairly large in the number of blocks and cows, though small in the number of members. Each association has 5 blocks, and from 200 to 250 cows, but only one member in each block, or 10 members in the two associations. This feature is unusual. Generally bull associations are apt to be made up of many owners of small herds. They are equally well adapted, however, for many or few owners, provided the members have among them a sufficient number of cows and there are enough blocks to permit exchange of bulls from time to time.

The 10 bulls introduced by the 2 associations are all of the same breeding, and were purchased at the same time. They were priced at $7,200, but a reduction was made in view of the large order. When the bulls came to Starkville there was great rejoicing and a public festival, with music and speeches and visiting dairymen. The college band played a new piece of music called the Bull March. This popular enthusiasm is warranted by the expectation of advancement for the industry which has become so important in that county. Let us consider now what particular advantage the organization will bring to the individual dairyman who goes into it as a member.

Improvement Expected.

Here are 10 bulls, one in each block. There are four or five hundred cows belonging to the members of the two associations, so we may expect each bull to sire 40 or more calves in a year, of which say 20 will be heifers. It is to be assumed that sires of this character will make an improvement in the producing power of the herds on which they are used; that is the purpose for which they are brought in. But right here is where the uncertainty comes. It is well known that some bulls, even of good ancestry, turn out to be poor sires; their daughters are worse than the dams from which they come. Yet if the bulls are well chosen it is probable that the majority will produce improvement in the herds. Experience shows that the improvement made by some bulls and the reduction may by others will generally average a fair-sized increase. The average effect on the whole collection can not possibly be foretold; yet it is reasonable to hope that the heifers sired by these bulls will be 30 or 40 pounds better on the average than their dams, in the amount of butterfat they produce.

Take the New Windsor Bull Association, in Maryland, for instance. That association has three bulls whose daughters have made records which can be compared with the records of their dams. The first year for which we have comparative figures the daughters of these three bulls made on the average 65.8 pounds more butterfat than their dams; the second year they made 63.3; and the third year, when the number was larger and there was more variation, the average was 44 pounds. For the purpose of the present calculation we will take a smaller average than any of these, namely, 30 pounds, which is about one-half of the average improvement due to association bulls at New Windsor in the first two years.

Butterfat Estimates.

Suppose now that the 20 heifers sired by each bull in the Mississippi bull associations average 30 pounds of butterfat a year more than their dams; that will amount to 600 pounds of fat a year. At the rates now prevailing, 60 cents a pound is a conservative estimate of the value of butterfat. Many creameries pay more. Six hundred pounds of butterfat at 60 cents would be worth $360. When the first year's crop of improved heifers begins to give milk, $360 will represent the improvement in the herd. The next year there will be another 20 heifers, and $720 worth of extra butterfat due to this bull; the third year, $1,080; the fourth year, $1,440; and the fifth year, $1,800. Total for the five years, $5,400. This averages $1,080 a year.

These young females may be put to use in different ways, of course. If their owner wishes to enlarge his herd, he will do it with these good heifers instead of with the daughters of an inferior bull. If he keeps his herd the same size, he will replace the older cows with these better-producing young ones. If he sells the heifers, he will get more money for them. But naturally the bull-association member will keep the better-producing cows for his own use.

Of course these heifers will have to be fed and cared for; but that would have to be done even if they gave only the same amount of milk and fat as their dams. They will need somewhat more feed, but not near so much more as their increased production. Their maintenance feed and all overhead costs will be the same. If with approximately the same attention they give $5,400 worth more butterfat in 5 years, that amount is mostly gain. Such gain results from using a high-quality purebred bull, and the means of having such bulls available to use is membership in the bull association.

An Enhanced Return.

Each one of these bulls cost something like $500. The interest on this for five years is $150. Total, $650. This is the expense required to secure an enhanced return of $5,400.

If we carry on the calculation for 10 years the showing will be better yet. The association is not limited to five years, but should go on indefinitely. In time, of course, new bulls will have to be put in; but in the second five years the difference between enhanced returns and enhanced expense may be three or four times what it is in the first five years.

It is for such reasons that the Dairy Division of the United States Department of Agriculture has been so earnestly striving to spread the knowledge of bull associations. By means of them the dairyman saves expense, and yet acquires finer stock. The poor bulls will be discarded as soon as recognized; and even in the first place the risk in using them is less than the risk where a farmer goes it alone. The good bulls, on the other hand, will be continued in service, shifting from block to block, for many years. Some of these

may turn out so good that they would cost thousands of dollars to buy; but each member of the association will simply await his turn, and then will have the service of these proved sires without any further expense.

There is more than personal or community profit in bull associations. There is national service. For economy of milk production we need better dairy cows, and to obtain these we must have more good bulls. Under the prevailing system, where each farmer uses one bull on a few cows for two years and then sends him to the butcher, there are not enough bulls of high quality to go around, and the good ones are lost as fast as found. The bull association spreads out the use of good bulls over more cows and a longer time, besides eliminating the inferior ones. Thus we raise the quality of the dairy stock of the whole country, to the advantage of the consumer as well as the producer of milk.

TIGHTENS QUARANTINE BAN AGAINST CORN INSECT PEST

Restrictions placed upon the importation of articles apt to carry the European corn borer or other dangerous insect pests were made more drastic through action recently taken by the Federal Horticultural Board of the United States Department of Agriculture in amending its quarantine order which has been in effect since February 21, 1920. The amendments make it necessary for foreign exporters to select their broom corn offered for shipment to the United States in such a manner as to eliminate visibly and patently infested material. As an additional precaution, disinfection of such broom corn will be carried out according to the original regulations.

Recently a shipment of about 18,000 very coarse large brooms from Italy arrived at New York. Upon inspection it was found that they were stuffed with stems of broom corn and should, therefore, be placed in the same class as baled broom corn as a possible carrier of the borer.

The wise selection of a farm is vital to the success and satisfaction of farm life. Choosing a farm often means choosing a place in which to live and work for a lifetime. It is important, of course, to decide wisely in buying for investment, but in making a selection for a home it is of double importance that one consider the various features that may have a decisive bearing on the farm business or that may affect the home life.

Beet Growers Would Have Sugar Mills— Many Factors First to Be Considered

Keen interest is being evidenced by sugar-beet growers in various sections of the country in the possibility of producing their own sugar on the farm by some simple process or of establishing and operating their own sugar mills. Owing to the scarcity and high price of sugar numerous inquiries on the subject are being received by the Bureau of Plant Industry of the United States Department of Agriculture.

Factors to Be Considered.

According to specialists of the bureau who have made a close study of all phases of beet-sugar production, there are several fundamental features to be taken into consideration in the establishment and operation of sugar mills. In the first place, no simple or inexpensive method of making sugar from beets on a home or small scale has been devised. Therefore a fully equipped sugar mill is necessary in producing sugar from beets. The smallest beet-sugar mill, say the bureau specialists, to be successful should slice not less than 500 tons of beets a day for a period of 100 days each year. Since the average yield of beets in the United States is 10 tons per acre, not less than 5,000 acres of beets must be grown annually for each mill of this size. A smaller acreage would probably cause the mill to operate at a loss under normal conditions. There is almost always a larger or smaller loss of beet acreage during the season in every community where beets are grown, hence in order to bring 5,000 acres of beets to maturity it would be wise to plant about 5,500 acres. In order to insure the production of from 5,000 to 6,000 acres of beets annually in a given beet area there should be available in that area at least from fifteen to twenty thousand acres of good beet land, so that proper crop rotation can be practiced. This acreage should be so located that from 25 per cent to 50 per cent of the beets grown can be delivered at the sugar mill by wagons, and the remainder of the beets should have a freight haul of less than 100 miles, in order to avoid heavy freight charges.

Initial Costs High.

The construction and equipment of a mill of 500 tons slicing capacity would cost under present conditions approximately $750,000. This is about 50 per cent above prewar costs, owing to the increased price of materials and the higher scale of wages. In addition to the initial cost of the mill approximately $500,000 of working capital would be required in cash for overhead charges and operating expenses until returns can be expected from the sale of the sugar.

Probably the most important of the other items to be taken into account in the operation of a beet-sugar mill is that of a supply of sugar-beet seed. A 500-ton mill would require about 100,000 pounds of seed annually to insure the production of sufficient beets for a 100-day run. Sugar-beet seed of good quality has been produced in the United States each year for several years, and those who are considering the erection of beet-sugar mills should look into the possibilities of producing their own seed. This minimum-sized mill would require in addition to its permanent employees about 300 workmen for the operating period and a good supply of pure water, high-grade lime rock, and plenty of coal for fuel, besides numerous other supplies.

BEAT HIGH COST OF LUMBER BY USE OF FARM WOODLANDS

To show the serious disadvantage and economic loss to which large numbers of farmers have been put because they have not properly utilized available woodlands, the Forest Service, United States Department of Agriculture, has compiled information regarding conditions in a number of sections of the country, of which the following cases are typical:

Farmers in Rockbridge County, Va., who have timber on their own farms have been little affected by high lumber prices, and have been able to make the necessary repairs and improvements, while their neighbors whose home woodlands failed to afford the needed supplies of timber have been obliged to cease or greatly curtail improvements requiring much lumber. These farms are suffering from depreciation in value. In California, where the agricultural prosperity has been marked for the past three years, many ranchers are now making only such repairs and improvements as are absolutely necessary. This is owing to the high prices, limited supply, and poor quality of available lumber. These and many other instances are cited in the report which the Forest Service has prepared on the condition of the forestry resources of the country in response to a resolution passed by the United States Senate.

TIMBER DEPLETION—ITS RELATION TO THE FARM

By W. B. GREELEY, Chief, Forest Service, U. S. Department of Agriculture

Who in this country uses the most timber? And who owns the most forest land? The answer to both questions is —the farmer. Both going and coming the farmer is vitally interested in timber.

Whenever the farmer builds a barn or silo or buys an ax handle the supply and the price of timber affects his pocketbook. On the other hand, whether material suitable for his farm implements or buildings is to be had when he wants it may depend upon how he manages his woodland. And his interest in timber does not stop there; it extends to the question of how convenient and desirable a place his farm shall be on which to live and to raise his family. Is he going to be able to keep his house and barns and fences in good repair?

The estimates of a large number of county agents show that the average farm, new and old, requires about 2,000 board feet of lumber yearly for repairs or new buildings. Can he get up-to-date tools and equipment at reasonable prices to work his land? After he has raised his crops, are they to be shipped in proper containers to the best markets or sacrificed because containers can not be had or cost too much? All these depend in no small degree on the supply and price of timber.

Greatest Wood-Using Industry.

Agriculture is the greatest wood-using industry of the United States. Forty-six per cent of all the wood which this country consumes annually is used on its farms. The yearly lumber bill for farm structures and improvements aggregates 6¾ billion board feet! Farm requirements for boxes, barrels, and other articles manufactured from wood call for nearly 4 billion board feet additional each year. Add to these requirements the 80 million cords of fuel wood consumed annually by farmers and over a billion cubic feet of fencing material and it is easily seen that farmers have a greater interest in an assured supply of timber at reasonable prices than any other class of American citizens.

The needs of the fruit growers in California for a steady and sufficient supply of box shooks at reasonable prices have become so urgent that several of the fruit associations are now operating sawmills and manufacturing their own box material on a large scale. A number of these sawmills are getting their logs from the national forests. The gradual depletion of timber in Florida and the adjacent States is confronting orchardists and truck farmers with a serious problem as to where and at what cost they can obtain in the future the enormous quantities of wooden containers required to move their crops to market.

Make Farming Difficult.

The availability of cheap lumber of good quality has been a tremendous aid in the rapid development of American farms. During the eighties, the Middle Western farmer obtained for $15 to $20 per thousand board feet white pine lumber from the Lake States of a quality now scarcely to be found. In February, 1920, he paid from $70 to $75 per thousand feet for framing and sheathing lumber and up to $150 per thousand feet for the better grades of finish, and all of it came from the South or the far West.

The effect of such excessive prices is inevitable. Lumber dealers in the Prairie States report that new farm construction in the spring of 1920 is less than half the normal volume, and that even current repairs on farm buildings have dropped off one-third. Reports from a large number of county agents in 33 States lying east of the Rocky Mountains indicate that the real demand for lumber for farm improvements and improved living conditions is greater than before the war, but that this demand is not being supplied owing to the excessive cost of lumber. The scarcity of lumber, particularly in our great central agricultural belt, is handicapping farm development, crop production, and the growing of live stock. And from all parts of this territory comes the report that these conditions, which tend to lower the standards of living and efficiency on the farm, are making it more difficult to hold the farmer's own children and desirable classes of labor.

FARM FORESTRY MAKES FARMING PAY BETTER BY—

1. **Marketing timber profitably.**
2. **Supplying timber for farm needs.**
3. **Furnishing employment for men and teams in winter.**
4. **Making waste lands yield a profit.**
5. **Increasing the sale value of the farm.**

The farmer in common with the other users of lumber is not merely experiencing a wave of high prices. Lumber, indeed, has had its full share of price inflation. This is due not only to general causes but also to the sudden release of pent-up demands for building and construction at a time when lumber stocks were low and the industry could not rapidly increase its production. But behind these temporary conditions is a more permanent and more serious cause of high lumber prices. The steady depletion of the great forest regions nearest the bulk of our agriculture and population has gone so far that 61 per cent of the timber now in the United States is west of the Great Plains; that lumber is being hauled longer and longer distances, paying higher freight charges and becoming more and more subject to the delays arising from car shortages and congestion of transportation; and that competition between different lumber manufacturing regions for the supply of many of our large rural and other markets, which has been the great leveler of lumber prices, is fast disappearing.

In all probability the existing high prices on lumber can not be long maintained. But the depletion of our forests is bound, from the very shortage and restricted location of the remaining raw material and from the narrowed field for competition, to bring about permanently higher price levels for timber products and to accentuate the temporary waves of high prices due to labor shortages, congestion of transportation, or other special causes. By and large, American agriculture will suffer more from this condition than any other industry, because our farms are the largest consumers of timber.

Capable of Self-Support.

The farmer is the most independent of anyone in the Nation when it comes to food. He might be equally independent in the matter of timber. He owns, in the aggregate, more forest land than the lumber barons and all other private owners combined. Farm woodlots, or woodlands, reach the enormous total of 191 million acres and comprise two-fifths of the forest area of the United States. East of the Mississippi River they cover 153 million acres, or 45 per cent of all the forests. A rough estimate places the timber standing in the farm woodlots of the Eastern States at 340 billion feet, or 40 per cent of the timber in this region. And this quantity includes over half of our remaining hardwoods.

It has been estimated roughly that the annual growth of timber possible on the farm woodlands of the United States is equal to 8½ billion board feet of material suitable for lumber, staves, boxes, etc., and 114 million cords of fuel wood. In other words, the farm woodlands themselves could produce more than the en-

tire quantity of fuel now consumed by the farmers and 81 per cent of the present quantity of lumber, boxes, and barrels now used on the farms, if their growing capacity were fully utilized. From the information to be had, which is far from complete, it does not seem probable that the farm woodlands are growing to-day more than one-third of the timber which they might produce if they were kept at work at full capacity.

A National Forest Policy.

The farmers of the United States are not only the largest consumers of forest products; they are the most permanent users of wood. However other industries may shift or change the great areas of agricultural land remain as the most basic of our national resources. Not only must the fertility of our farms be maintained; their homes, the improvements necessary for their efficient operation, the containers required to ship their products—these requirements of permanent and efficient agriculture must be provided. American agriculture can not thrive if wood is priced as an imported luxury. There is no more immediate or more vital need for a national policy of reforestation than the need for assuring a cheap and abundant supply of timber for our farms.

The United States contains an acreage of forest land not required for other purposes that is ample to grow all the timber it needs. But the great bulk of our forest land is now growing only a small fraction of the timber which it might produce, and 81 million acres have been so devastated by fire and destructive lumbering that they are growing almost nothing at all. A national forest policy must replace these enormous areas of idle, or largely idle, land with growing forests—distributed all over the country. Just as far as the character of the land will permit, timber should be grown near where it is to be used; and aside from the Prairie States and limited regions where all the land is too valuable for growing timber, this is entirely feasible. To put back real forests upon our denuded lands means: First, that forest fires must be stopped; and, second, that we must apply to the growing of timber the study and intelligence that has been given to the growing of food crops. There is no one who has a more vital interest in getting this thing done than the farmer, and by that same token should the farmer see to it that his own forest lands are in the working, not the idle, class.

Far too generally, the farm woodlot is the result of chance. Its size, the material it contains, its value to the farm, such as it is, have come about haphazard. The direct contribution which the farm owner can make to solving our timber problem is to determine what parts of this land are suited to wood rather than other crops and to develop these portions of his land for the production of wood crops with the same foresight and the same conception of permanence as his orchard or his wheat field.

In many sections of the United States, particularly in the Lake States and the South, the farm woodlot, or woodland, represents simply the unimproved ground within a farm holding, whose soil may or may not be inferior for field crops. In the Central States, indeed, many woodlots occupying the poorly drained portions of farms include some of their best soils. Such woodlots must decrease as clearing and cultivation are extended.

In other regions, particularly New England, farm woodlots are extending through the reversion of poor land, hill pastures, and the like to forests. Such regions perhaps afford the best opportunity for the development of the woodlot as a permanent and valuable part of the farm. Many far-sighted farmers, indeed, are aiding natural reforestation by planting poor or waste lands. Not only can these woodlots produce fuel, poles, and fencing needed on the farm itself, but they readily grow commercial crops of timber in relatively short periods for such products as pulp wood, box lumber, telephone poles, and railway ties.

Will Meet Many Needs.

In most of our agricultural regions the farmer who plans his business with care will find that a woodlot on some portion of his farm is valuable as a permanent enterprise. It will produce the fuel and other rough products needed on the farm. It can usually combine with home supply the production of salable material, not alone quickly grown products like low-grade lumber, pulp wood, or ties, but wood of exceptional value like hickory spoke stock, ash billets for handles, and hardwoods required by the vehicle and furniture makers. The farm woodlots now contain half of our hardwood timber. It takes but little care and foresight to keep these woodlots stocked with species of timber that will yield valuable products and whose harvesting, little by little, will add appreciably to the income of the farmer. Many a woodlot, indeed, will serve its owner as a bank in which he may, by a little thought and labor in odd hours, accumulate material whose total quantity and value will some day afford a pleasant surprise.

The farmer's part in national reforestation is thus to make the woodlot a permanent asset of the farm. Its grazing should not be left to chance but should be intelligently adjusted within the limits necessary to prevent injury to growing timber. Woodlot crops and their markets are worth real study. As permanent farm enterprises, upon which real thought is expended, the woodlots of the United States will not only pay their owners well but will also aid powerfully in solving the national problem of timber depletion.

JOINTWORM FLIES BECOME SERIOUS MENACE TO CROPS

Insects to which farmers as well as scientists have given comparatively little attention, but which constitute a serious menace to crops, are the jointworm flies. One reason for popular indifference to these flies is that parasites have usually kept down their number and only occasionally have they been able to multiply sufficiently to cause serious destruction. Though the wheat jointworm has been viewed with a degree of indifference, it often exacts a toll of from 1 to 5 bushels an acre. If it had not been for the parasites which attack this jointworm, farmers in the Eastern States would long since have been forced to abandon wheat growing entirely.

According to entomologists of the United States Department of Agriculture, the menace is serious enough to call for more definite protective measures than have been practiced. Experiments indicate that plowing under the stubble is an effective means of combating these insects. This would destroy all of the insects if all of the infested stubble could be completely buried, but this is practically impossible. Nevertheless, it serves as an effective means of control. While such a method would necessitate a change in the rotation of crops where wheat is used as a nurse crop for clover, millions of dollars could be saved annually if it should be adopted, in the opinion of experts.

If the crop rotation were changed and the stubble plowed under, it would suppress not only the jointworm, but also the Hessian fly, and thus two of the major insect pests of wheat would be largely shorn of their power to harm our most valuable bread grain.

The barley jointworm, the rye jointworm, and the rye strawworm undoubtedly could be controlled in the same manner, if necessary. The wheat strawworm is very easy to control. Since one generation is almost wingless it is only necessary to keep down all volunteer wheat and never plant wheat nearer than 40 to 50 yards to infested stubble. This allows a wide margin of safety, since these insects do not travel more than 12 or 15 feet, it is believed.

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FINDS HIGH LUMBER PRICES SERIOUS CHECK TO FARMING

Live-Stock Raising and Dairying Said to Be Hardest Hit.

Present Conditions Tend to Lower Standards of Living on the Farm, Says Forest Service in Report to the Senate—Hard to Hold Labor.

Farm development and the production of crops and live stock are being seriously handicapped by excessive lumber prices, according to a report recently made to the United States Senate by the Forest Service of the United States Department of Agriculture, and just published. Live-stock raising and dairying seem to be the hardest hit because of the large barn equipment and shelter necessary. Heavy losses of implements and crops due to a lack of proper storage facilities are said to have taken place.

In some of the newer sections of the country it is reported that farmers without a stable financial basis are abandoning their farms because of the cost of new construction. From all parts of the country come reports that present conditions are tending to lower the standards of living and to make it more difficult to hold the farmer's own children and desirable classes of labor on the farm.

Aided Rapid Development.

Cheap high-grade building material, the report points out, has been a powerful aid in the rapid development of farm lands. The Middle West, for example, was built up with the output of white pine lumber from the Lake States. About 1880 the best quality of white-pine lumber, such as now can hardly be found in any market in the country, commonly retailed throughout the Middle West for $15 to $20 per 1,000 feet. In February, 1920, the farmer in Kansas paid $70 per 1,000 for yellow pine framing and about the same for Douglas fir. For No. 2 common lumber suitable for sheds and rough construction, either fir or southern pine, he paid $72.50. For B and better yellow pine finishing lumber for house construction he paid $147.50. Silo stock cost him $185.

Out of information received from 220 counties in 32 States, only about half a dozen localities reported more building than in the past. New building is reported as going on normally or in excess of normal in only 10 out of every 100 counties, and this in regions of exceptional prosperity. In the Prairie States from Illinois north and west, lumber dealers reported that repairs have been deferred to an extent of about 32 per cent and that new construction is something less than 50 per cent of normal. The widespread deferment of building is almost uniformly laid to a combination of high lumber prices and shortage of labor.

FARM WOODLAND IN THE SOUTH.

Woodlands on farms comprise one-half of all the forested lands.

There are more than 125,000,000 acres of farm woodland.

In Maryland, Virginia, North Carolina, Kentucky, and Oklahoma more than 60 per cent of all forest land is on farms.

The present yearly farm income from woodlands is estimated at about $150,000,000.

Apparently throughout much of the region covered supplies of lumber can usually be secured in the desired amounts and quality if the prices could be paid. Locally, however, the pronounced changes in lumber distribution of the past year made it difficult to secure materials and qualities without delay. These difficulties were greater with the better grades than with common lumber and they occurred in the heart of the lumber-producing district of the South because of excessive demands and competition for this class of material.

Predicts Bigger Demand.

Estimates received from county agents indicate an average annual utilization per farm unit of about 2,000 board feet, and increased future demand for lumber in practically the entire region covered is predicted in order to take care of im-

(*Continued on page 5.*)

SECRETARY MEREDITH FIXES CHICAGO COMMISSION RATES

Evokes Powers Under Food-Control Act to Correct Discrimination.

Orders Present Commissions on Cooperative Shipments of Live Stock Discontinued—Finds Them Unreasonable and Discriminatory—New Rates Effective August 16.

Declaring unfair certain rates charged by Chicago commission men on cooperative shipments of live stock, Secretary of Agriculture Meredith has evoked the powers of the food control act to fix other rates. The order, which became effective August 16, was taken as a result of a hearing held in Chicago April 12 and 13, at which seven commission firms operating under Federal licenses appeared in answer to a complaint filed with the department by the American Society of Equity.

In its complaint the society charged that as a result of action by the Chicago live stock exchange members were required to charge a different and higher rate on live stock in car lots having more than one owner. The difference between the rates for single and plural ownership, it was complained, was unreasonable and discriminatory in that it was laid for the purpose of discouraging cooperative marketing of live stock by farm organizations.

Notifies Commission Men.

Secretary Meredith's action was in the form of a notice to the commission men that the present rates must be discontinued and that the following schedule of rates would be allowed for car lots having more than one owner in addition to the rate for a car lot having a single owner:

For more than 1 and not more than 10 owners, $2.

For more than 10 but not more than 20 owners, $3.

For more than 20 owners, $3.50; provided that in no case shall any one owner of such car lot pay a higher rate than the maximum charge for a car having a single owner.

The order, it was pointed out, is not directed at the Chicago Live Stock Ex-

change, but at the commission firms themselves, because being under Federal license they are subject to regulation under the food-control act which is still in force. President Wilson, by proclamation, June 18, 1918, required commission men to take out Federal licenses and later prescribed regulations for conducting their businesses. These licenses and regulations are still in force, it was said.

"Unfair," Says Secretary.

"I find," Secretary Meredith said in his order, "that the difference in the commission rates charged for selling a single ownership car and a plural ownership car should be the actual cost of the additional weighing and accounting required in the case of a plural ownership car. I find that you have been following a schedule of commission rates which permits, and that you have been exacting, a maximum charge of $7 in the case of cattle and calves, $5 in the case of hogs, and $6 in the case of sheep and goats, more for a car lot of live stock having more than one owner than for a like car lot of live stock having a single owner, and that the amount of the charge is determined by the number of live stock in the car rather than by the number of owners. I find that both these charges and the method of determining the amount of the same are unjust, unreasonable, discriminatory, and unfair."

Million New Cars Add to Wear of Roads—States Have More Revenue for Repairs

That the present interest in the construction of new highways should not divert attention from properly maintaining highways already improved is a point which the Bureau of Public Roads, United States Department of Agriculture, has had occasion to emphasize many times in recent months, particularly in view of the enormous increase in motor vehicle traffic which is taking place.

Cars Increase 23 Per Cent.

The bureau recently completed a compilation of statistics from all the States of the Union showing that there were a total of 7,565,446 registered motor cars (including motor cycles and trucks) in the United States in 1919. This is an increase of 23 per cent, or 1,418,829 motor cars over 1918. Such figures indicate that the country's highways are being used far more than in the past, it is pointed out, and in consequence added attention must be given to the repair problem. The increase in the number of cars for 1919 over 1918 represents about 10 per cent more cars than the total number registered in the entire United States for 1913.

Additional use of roads and streets has, of course, been accompanied by additional revenue paid to State and local governments in the form of license fees, which in nearly all States are devoted to highway needs. The registration and license fees for automobiles, trucks, and motor cycles in use in 1919 totaled $64,697,255.58—an increase of 20 per cent over 1918. The total revenues for New York and Pennsylvania the past year were about double the revenues received for all motor vehicle registrations and licenses in the entire United States in 1912.

Repairs Hampered.

Certain of the States, notably Maryland, have experienced difficulty in securing road-building materials owing to labor shortage, hampered transportation facilities, etc. Maryland has had to make a special appeal to the Interstate Commerce Commission for aid in getting enough material shipped in to properly care for road repairs.

Two-Mule Rigs Better Than One—Studies Methods Used in South

Cultivation cost is largely reduced by using adequate power harnessed to modern cultivating machinery. Figures compiled by the United States Department of Agriculture in farm management studies conducted upon southern farms show that the two-mule team hitched to a two-mule implement saves time and money over the usual one-mule outfit. In Texas, where the farms are comparatively large, the two or four mule hitch is generally used, but the farmers in the Southeastern States are inclined to depend upon the single rig to do their plowing, planting, and cultivating, even where their acreage is large. In preparing the land for cultivating crops the southeastern farmer with his one mule makes five trips across his field to the Texas farmer's one. The Texas man cultivates both sides of the row and the middle at a single trip, but a one-mule hitch must make two or three trips to accomplish as much. Moreover, the single-mule farmer uses twice as much man labor as does the chap who drives a team. In some cases the one-mule farmers get around this difficulty by exchanging mule labor and working two-mule teams.

An Alabama farm study furnishes a dollars-and-cents accounting of the two methods. "When the rows were laid out with the contour of the land and cultivated only one way, the cost of cultivation was $1.38 an acre and the hoeing cost 70 cents an acre. When the corn was check-rowed and cultivated both ways, the cost of cultivation was reduced to $1.10 an acre and the hoeing cost was only 21 cents an acre." Such treatment is only possible with adequate machinery.

EARLY PICKING MAKES TEN ACRES DO WORK OF FIFTEEN

Ten acres of cotton picked at the proper time in the fall from October 1 to November 1 may yield as much as 15 acres of the same cotton picked in January, according to the specialists who have been conducting farm studies in the South for the United States Department of Agriculture.

On a farm in Arkansas an acre of Boykin cotton harvested in the period between October 1 and November 1 was worth $152 for lint and seed. In January an acre of an equally good crop of the same variety was worth only $106. Express cotton gave $193 per acre in October, but in January the crop was worth only $112.

The result of delayed picking is chiefly a deterioration in grade and quality. For example, in a case where October first cotton rated as "strict middling," November first cotton of the same variety rated as "strict low middling," while on January 21 the same variety classed as "good ordinary" only.

AMERICAN SUMAC IN DEMAND.

The demand by manufacturers for American sumac this season totals from 500 to 700 earloads, or from 5,000 to 7,000 tons, according to information received by the United States Department of Agriculture. The price ranges around $2 a hundred pounds for sumac delivered at the shipping point or at the extract factory.

Country people should find a ready market this year for all the sumac they can gather. Being a wild plant, sumac costs nothing to raise, and the many tons of it allowed to remain ungathered each year can be readily turned into profit. The sumac season lasts about three months. Unlike berry and other crops, sumac does not have to be harvested all at once. It can be gathered and cured from time to time throughout the summer and marketed when large enough quantities have been collected.

Recommends Trenching Machines for Farms—Saves Manual Labor; Does Work Quickly

To the farmer contemplating tile laying, to whom the saving of time is an important item, and who finds labor difficult to secure, trenching machinery is recommended in preference to hand labor by the United States Department of Agriculture, which has investigated the performance of machines and implements ranging from inexpensive ditching plows to costly power excavators and trenchers. On the whole, the cost of trenching by machinery is not materially different from that of hand work, according to the department's investigators, therefore the chief advantages lie in the dispatch with which work can be done and the ability to dispense with manual labor.

If a landowner expects to lay as much as 100 rods of tile drain in soil which would require picking, but which contains no rock, he is justified in buying a ditching plow costing as much as $20. If he proposes to construct 1,500 rods of tile drain in soil free from rock and large roots, he can well afford to purchase a horse-drawn trenching plow costing from $300 to $500, or possibly more. If the owner feels he can sell his machine for $200 when his ditching is completed, he is justified in purchasing one for digging as little as 1,000 rods of drain.

Investment Justified.

For installing as much as 5,000 rods in soil free from rock, stumps, and large roots, the investment of $3,000 in a power driven trenching machine probably is justified, assuming that it could be sold later for one-half its original cost. Machines costing over $5,000 are usually suitable only for contractors, owners of large plantations, and others having an unusual amount of trenching to do.

Not infrequently the farmer contemplating the purchase of trenching machinery may overlook certain items which should be considered in estimating the cost of trenching by machinery. The cost of operations per day will depend upon the number of men and teams employed, the wages paid, and the amount and cost of fuel and repairs. In respect to labor the internal-combustion engine has the advantage, for usually but one skilled operator is needed, while a steam outfit also requires a fireman and a team with a driver to haul fuel and water.

The amount of work done per day will depend on soil conditions, the efficiency of the machine, and skill of the workmen. Wet, sticky clay is a soil particularly difficult to work, and a sandy subsoil often causes trouble. In very hard subsoil progress will be slow, and interruptions will, of course, result from the presence of large stones or thick tree roots. Some machines will work through 15 inches of frost, but this is a severe test for any trenching machine or excavator.

In selecting any type of machine, the purchaser should make sure that the manufacturer is able to furnish repair parts on short notice, as delays are costly.

Results Published.

The results of the department's investigation have just been published in Farmers' Bulletin No. 1131, "Tile Trenching Machinery." In addition to a general discussion of the respective merits of various classes of trenching machines—plows and scoops, wheel excavators, endless-chain excavators, and scraper excavators—the bulletin contains a detailed description of the principal types of machines in each of these classes. This material is designed to be particularly helpful to the man contemplating tile work on his property. It gives a clear idea of the capabilities of each type of machine, including cost figures. The latter, however, can not be taken as applicable in every case, since costs of machinery have been mounting steadily for some time. Copies of the bulletin may be had by addressing a request to the United States Department of Agriculture, Washington, D. C.

Tells How to Treat Ivy Poisoning—Don't Use Ointments in Early Stages

In the early stages of ivy poisoning remedies having a fatty or oily base, such as ointments, should not be used, as the grease or oil tends to dissolve and spread the poison, according to specialists of the United States Department of Agriculture. Instead they advise simple remedies such as local applications of solutions of cooking soda or of Epsom salt, one or two heaping teaspoons to a cup of water. Fluid extract of grindelia, diluted with 4 to 8 parts of water, is often used.

Solutions of this kind may be applied with light bandages or clean cloths, which should be kept moist, and should be changed and discarded frequently to avoid infection. During the night, or when moist applications can not be used, the poisoned surfaces should be carefully cleaned and dried and left exposed to the air rather than tightly bandaged. In the later stage, after the toxic material has exhausted itself, zinc-oxid ointment and similar mild antiseptic and astringent applications hasten healing.

These are a few of the helpful hints concerning ivy poisoning contained in Farmers' Bulletin 1166, which tells also how to distinguish between poison ivy and poison sumac. The bulletin is illustrated with pictures of the two plants, which are often confused.

SAVES $2,000 BY READING ARTICLE IN MARKET REPORTER

A saving of $2,000 in the purchase of 10 cars of cottonseed meal was realized recently by a New Jersey farmers' exchange as a result of an article in the Market Reporter, published by the Bureau of Markets of the United States Department of Agriculture. The manager wrote that the information in the article which discussed the cottonseed-meal situation, caused him to delay placing an order for his association, with the result noted. The letter is typical of many received by the bureau.

The Market Reporter, issued weekly, and sent free on application, reports market conditions with regard to live stock and meats, poultry and dairy products, fruits, vegetables, peanuts, cotton, wool, grain, seeds, hay, and feeds; the prices paid at representative markets and the volume of stocks being moved. The information on these various products is obtained from authoritative sources by means of direct representatives at large market centers, and through the cooperation of some 474 railroads whose superintendents make daily reports to the bureau as to carload lots of certain kinds of produce loading and in transit.

NOW BECKON TO AMERICA.

Never before has there been such opportunity as at present for the United States to occupy an important place in world commerce, particularly with regard to food supplies, say marketing specialists of the Bureau of Markets, United States Department of Agriculture.

These experts state that the matter of national grades is therefore one of paramount importance. In the markets of the world the seller with the best graded products is the most successful. Standardization establishes a common language between the buyer in one country and the seller in another; in fact, experience has shown that the decisive factor in the development of foreign business often hinges on proper standardization and grading.

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OFFICE OF INFORMATION
Harlan Smith, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

TELLS PUBLIC HOW TO USE UNCLE SAM'S FARM MOVIES

The motion picture is a time saver. Suppose a county agent is showing a group of farmers how to construct a wooden silo—with the motion-picture outfit he can show them in 15 minutes what it would take him days to show by actual demonstration. Suppose a home demonstration agent wishes to show a model kitchen in Massachusetts to a group of farm women in Nebraska. A trip from the Great Plains to the North Atlantic is not necessary. The thing can be done in a few minutes with the motion-picture projector and a reel of films.

The United States Department of Agriculture is using the motion picture in a great many ways. Films already made cover 112 agricultural subjects. There are 460 reels, or more than 460,000 feet of film available for distribution. All of this film is in circulation, most of it constantly. During the past 12 months more than 700,000 persons saw one or more of these films.

The films were in use not only by the extension workers and other employees of the department, but by State colleges of agriculture, farm bureaus, chambers of commerce, women's clubs, and various other organizations, as well as commercial motion-picture houses.

Persons desiring to use any of these films can borrow them if they comply with some necessary regulations. Applications can be made through the county agent, the director of extension of State agricultural colleges, or any other officially cooperating agency. The borrower does not have to pay anything for the use of the film except the cost of transportation.

The whole matter is explained in detail in Department Circular 114, which has just been printed and copies of which may be had free. This circular gives a list of all the motion-picture reels; it explains in detail the borrowing process; it outlines the procedure for those who would rather buy than borrow; it tells how to select a projector and sets forth the advantages of the various kinds; it discusses lights and screens, and it gives definitions of words that motion-picture users should know.

RECORDS HEAVIEST RAINFALL AS 2½ INCHES IN 3 MINUTES

Two and one-half inches of rainfall in three minutes!

A reproduction of the rain gage register showing that downpour—a record made in 1911 and still recognized by the Weather Bureau, United States Department of Agriculture, as the most intense rainfall of which it has data—appears in the current number of the Monthly Weather Review, published by the Weather Bureau. The illustration accompanies a technical discussion of rain and sunshine in the Canal Zone. This heavy fall of rain occurred at Porto Bello in the Canal Zone.

Not alone in the Canal Zone but at 200 points in the United States the Weather Bureau maintains observation stations at which accurate records are kept of rainfall, snowfall, temperature, etc., so that any person interested can ascertain accurately the weather history of practically any section of the country by applying to the Weather Bureau. Commercial and scientific organizations, as well as farmers and others interested in various crops, frequently apply to the bureau for information of this sort.

WINS STATE CHAMPIONSHIP FOR CLUB CANNING SUCCESS

Over 300 jars of fruits and vegetables preserved in 1919 is the record of Lelia Nash, of Chicopee, Mass., who was awarded the Massachusetts State canning championship at the meeting of county boys' and girls' champions held at Amherst in August. Last year was Lelia's third year as a canning club girl, and she won both the county and State championships in that project. In addition, she made considerable money. Her preserves and pickles were sold to people who wanted a winter's supply and had not time to put them up for themselves. Lelia is enrolled in the contest again this year and hopes to win the State championship again.

Figures just issued from State club headquarters at Amherst emphasize the real work which these club girls accomplish and the amount of their products. The figures are for the baking and sewing clubs which started competitions last January and have just been brought to a close. The 2,503 girls engaged in these club activities made 60,000 loaves of bread, 3,500 garments, and darned 10,000 pairs of stockings.

Hampden County alone had 262 girls engaged in such work. Ninety-three per cent of them carried their club work through to a successful conclusion, which is three per cent higher than the State average. They were organized into 23 cooking or sewing clubs, and 18 of these organizations ended the year as "banner clubs," every member fully completing the amount of work laid down for her when she entered the contest.

LEARN MARKETING METHODS FROM WIVES' ENTERPRISE

"It was only a little object lesson in cooperative marketing" is the modest statement of a Tennessee woman whose activities have produced a prosperous dairying community.

In 1909, 14 women were organized at Pulaski, Tenn., to demonstrate the theory of cooperative effort. Butter and eggs from the relatively few cows and fowls of the community were assembled and marketed. The quality of the products, due to the care taken in selection and preparation, was such that they commanded the highest prevailing prices. The women's husbands began to take notice and soon interested themselves in dairy cows. This led to the introduction of Jerseys, separators, silos, milking machines, and the shipping of whole milk and cream.

Similar results are being secured in many sections of the country, State experts of the Bureau of Markets, United States Department of Agriculture. The movement frequently starts with a small group of farmers, farmers' wives, or boys and girls, who quickly demonstrate the advantages of improved production and marketing methods. The county agents advise those interested in the formation of such organizations and the administration methods to be adopted and are glad to render every assistance upon request.

Sheep scab often causes large loss because of a decrease in the quantity of wool produced, a loss in weight and general condition, and the death of many sheep. While the disease is highly contagious and its effects severe, it can be easily cured.

To Help Business Use New Discoveries—New Service Formed to Aid Chemistry

Commercial and industrial concerns will be helped to apply new processes and discoveries of chemists in the United States Department of Agriculture by an Office of Development Work just created by the Secretary of Agriculture in the Bureau of Chemistry.

Urgently Needed.

The staff of the new service will be made up of engineers rather than chemists. David J. Price, chief engineer in the dust-explosion investigations conducted by the department, will be in charge of the new work.

Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, in a letter to the Secretary stated that such a service is urgently needed to translate the work of the bureau into terms that could be understood and applied by the manufacturer and investor. Every year valuable discoveries are made concerning the utilization of manufacturing waste, or a new food is found, or a new dye, glue, or preservative. Without the service of a business office such as is now provided the value of these discoveries is greatly reduced through the discoverer's inability to present his proposition in terms which the business man can understand, and the public runs the risk of losing a much-needed material. Under the new organization the engineers will look after the product as soon as it has passed beyond an experimental or laboratory stage and will prepare estimates for the convenience of the manufacturers.

Will Furnish Information.

Mr. Price and his associates will furnish data upon raw-material supply, cost of production, and the uses to which the product is adapted—in short, they provide an unbiased practical prospectus to show the public exactly what may be expected from the new material or process on a quantity-production scale. It is believed this cooperation will develop many neglected sources of public and private profit.

SHOWS OREGON AS A PLAYGROUND.

A handsomely illustrated folder, including a map of the principal highways for the entire State of Oregon, has just been issued by the Forest Service. The new publication—"Road and Recreation Map of Oregon"—should prove of immense value to all persons, particularly motorists, seeking recreation in this region endowed with such a variety of natural attractions. It describes recreation spots in the national forests of that State. These picturesque areas, many of them heavily forested, are "in every sense free recreation grounds," says the pamphlet, "and no trammels are put on your enjoyment. All the Forest Service asks is that you be careful with fire and that you look to the proper sanitation of your camp." Copies of this pamphlet may be obtained by addressing the District Forester, Portland, Oreg.

Exposure to weather often causes greater destruction to farm implements than using them. Avoid this loss by storing all machinery and tools properly under shelter before winter sets in.

It is much more fun to watch your money grow than to watch it go. Buy War Savings Stamps.

FINDS HIGH LUMBER PRICES SERIOUS CHECK TO FARMING

(*Continued from page 1.*)

provements looking toward better equipment and improved living conditions, provision for increasing population, and the development of new farm units. In the face of this demand we are confronted by a decreasing lumber production in all of the forest regions of the country except the extreme West.

Farmers of the country were also affected by the inability of the manufacturing concerns to secure adequate supplies of hickory, ash, and oak for use in the construction of agricultural implements. The demand for these woods has become so great that it is impossible to secure needed amounts. Prices have gone so high that a number of concerns are making purchases in the open market only when prices do not exceed a prescribed maximum, and the amounts secured have fallen to about one-fourth of their utilization. In the case of farm implements it has been found that it is impossible to increase the price of the product beyond a certain point without a marked falling off in sales. The result is that the material in the open market goes to the industries like the manufacture of automobiles, which can more readily pass on increased costs to the consumer.

One cause of the conditions outlined above, according to the report, is the cutting of our forests without making provision for growing adequate new supplies of timber. The original softwood forests of New England and the Lake States have been almost exhausted. The pine forests of the South are being depleted at a rapid rate and in 10 years will not produce more timber than the South itself will need. The only remaining supply lies on the Pacific Coast and this must be called on to supply increasing amounts for the country as a whole. The hardwood forests are likewise rapidly disappearing and such woods as oak, ash, and hickory, that are used by makers of vehicles and agricultural implements, are becoming increasingly scarce. The only remedy for the situation, it is pointed out, is for the Federal Government, the States, and private individuals to grow timber systematically.

WILL CULL PUREBREDS.

Interest not only in grading up scrub and grade live stock, but also in improving the quality of purebreds themselves, is shown in a statement from a South Dakota farmer to the United States Department of Agriculture. After listing 100 purebred Chester White swine in the "Better Sires—Better Stock" movement, this farmer writes: "Out of this number of swine there will be kept for breeding purposes about 50 per cent—those that come up to a fixed standard. The rest will be sold to the market for slaughter."

Other stock on the farm includes Holstein cattle, Shropshire sheep, Rhode Island Red chickens, and Bronze turkeys. All of the stock is to be headed by purebred sires.

FORECAST OF SEED CROPS.

The production of practically all small vegetable seed crops will be considerably less this year than in 1919 or 1918, according to reports received by the Bureau of Markets, United States Department of Agriculture. The reductions range from 88 per cent for spinach to 12 per cent for lettuce. Increases are shown for garden pole beans, garden peas, and onion sets.

A slightly larger production than last year of the early crop of alfalfa seed in the Southwest is indicated. Due to small acreage and lighter yield per acre a production of timothy seed of approximately 80 per cent of last year is forecast.

Grow the Best and Get the Best Prices—Peanut Now Ranked as Good Money Crop

"Grow the best, put them up the best, and get the highest prices."

This pithy admonition to growers of peanuts for profit sums up the advice given by specialists of the United States Department of Agriculture. Furthermore, in a bulletin now ready for distribution, they tell growers how this can be done.

The peanut is beginning to come into its own; far from being looked upon as a circus and holiday-fete delicacy its importance has waxed until to-day it is ranked as one of the best money crops for use in rotation with cotton and other farm crops in the fight against the boll weevil. It is now of commercial importance in no less than 12 Southern States. Until comparatively recently it was grown in the greater part of the Gulf coast region chiefly for stock feeding. In 1918 the peanut crop of the United States was approximately 53,000,000 bushels, valued at about $100,000,000.

Demand Increasing.

Peanuts are in increasing demand for oil manufacture and for making many other peanut products. It has been shown to be safe for the Southern farmer to grow peanuts, as every part of the crop can be used to advantage for feeding on the farm in case the market does not justify their sale. A closer working relation between growers and dealers, say specialists of the department, is desirable; and the establishment of standard grades will do much toward stabilizing the industry.

Good seed, proper preparation of the soil, frequent cultivation of the crop, proper harvesting and curing and grading of the product according to standard grades are the chief essentials to the growing of peanuts for profit. Most failures have been due to the neglect of one or more of these considerations. Great losses have resulted from the practice of windrowing the peanut vines for curing instead of stacking them around small poles.

If soil conditions are favorable peanuts will adapt themselves to a wider range of climate than almost any other southern crop. It is essential, however, that the crop be grown on soil where a loose surface can be maintained. The climatic requirements are a season of 100 to 140 days without frost, moderate rainfall during the growing period, an abundance of sunshine, and a relatively high temperature. Best results are secured under conditions where the normal annual rainfall is from 42 to 54 inches. Peanuts are frequently grown under irrigation. Light sandy loam soil is best adapted to their production for market. Poorly drained or sour soils are not generally desirable.

By-Products Useful.

Peanuts are exceptional among southern farm crops in that every part of the plant and all by-products resulting from the factory processes through which peanuts pass can be utilized to excellent advantage mainly for stock feeding. With the establishment of the peanut-oil industry, a line of practically new by-products has appeared upon the market, peanut cake and peanut meal being the most important. The demand for peanuts is increasing as new uses and a wider market are found.

Farmers' Bulletin 1127, prepared by the Bureau of Plant Industry of the United States Department of Agriculture, gives detailed information on practically all phases of growing and marketing peanuts. Copies may be had free upon request of the department at Washington, D. C.

Must Properly Fill Cans with Food—Law Also Requires Correct Labeling

Canners should fill their cans as full of solid food as is practicable, if they wish to have their product meet the requirements of the pure food laws, says the United States Department of Agriculture, which has been giving considerable attention to the matter of slack-filling on the part of manufacturers. Recently the Bureau of Chemistry issued a schedule of drained weights for certain canned products for the guidance of the canners. In reply to inquiries from canners who complain that in some instances they can not meet these requirements the department gives this advice:

"Fill the can as full of solid food as is practicable by the best commercial methods without impairment of the quality or appearance of the product. The can that is as full of solid food as is practicable and correctly labeled will meet the requirements of the pure food law with reference to fill, will promote fair trading among canners, and will win the confidence of the trade and the consuming public."

It is essential that the quantity of food in the can be standardized in order to promote fair trading, food officials in the department point out. Recently, it is said, a pack of peas that lacked 8 per cent of being properly filled was found. In the quantity of the pack the slack-filling represented a difference of several thousand dollars in the cost of peas to the consuming public.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended August 14, 1920:

Farm Bookkeeping. (Revised.) Farmers' Bulletin 511.

Breaking and Training Colts. (Reprint.) Farmers' Bulletin 667.

Sheep Scab. (Revised.) Farmers' Bulletin 713.

Growing Irrigated Grain in Southern Idaho. Farmers' Bulletin 1103.

Game Laws for 1920. Farmers' Bulletin 1138.

Capillary Movement of Soil Moisture. (Professional Paper.) Department Bulletin 835.

Cost of Producing Apples—Western New York. Department Bulletin 851.

Vacation on the White Mountain National Forest. Department Circular 100.

Securing a Dry Cellar. Yearbook Separate No. 824.

Sweet-Clover Seed. Department Bulletin 844.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 1138; Department Bulletin 835; Department Circular 100.

THE ACCREDITED-HERD PLAN.

The accredited-herd plan, by which owners of tuberculosis-free herds receive State and Federal recognition, has met the approbation of breeders of cattle all over the United States, say specialists of the U. S. Department of Agriculture, and it is reasonable to expect that this plan will be followed until most of the purebred herds of the country are under supervision. The accredited-herd plan has been conducted only in a general campaign, without concentration of effort in any particular locality; but it would be advantageous for a county having a large number of purebred herds to make an effort to have the tuberculin-testing work extended to every herd in the county.

"BETTER SIRES—BETTER STOCK" GOES AHEAD

REPLACES INFERIOR BIRDS.

"I sold my inferior sires last year. They don't pay."

With this explanation a poultryman in Marion County, Ill., enrolled his poultry in the "Better Sires—Better Stock" movement. The entire flock of 210 birds is of pure breeding.

ONCE A SCRUB, ALWAYS A SCRUB.

How do you suppose the cow of 46 centuries ago—26 centuries before Christ—would look compared with your cow? Well, she might not conform to any standard classification, but, judged on general appearance, she would outclass a great many American cows of to-day. A comparison has been made in picture slides by the United States Department of Agriculture. Pictures of cows of the twenty-sixth century B. C., found on Egyptian monuments, have been made into stereopticon views and placed alongside pictures of scrub cows of to-day. The same is done with Assyrian horses and some scrub horses of the present time. They illustrate the fact, "Once a scrub, always a scrub." These slides are distributed as a part of a series on better live-stock production by the States Relations Service.

HELPED FAMILY BUY HOME BY RAISING PUREBRED HOGS

William A. Ross, jr., of Newport, Del., a wide-awake, energetic colored boy, has demonstrated that purebred hogs can be raised profitably on the home farm. In the spring of 1918 young Ross enrolled as a member of the Newport Boys' and Girls' Pig Club. Through the assistance of the New Castle County Farm Bureau, Delaware College, and the president of the Central National Bank of Wilmington, 12 purebred registered weanling Chester White pigs were secured for the club at $17.50 each from a well-known breeder of Chester County, Pa.

William secured one of these; and protected by inoculation against hog cholera, and with proper feeding and care the pig grew into a large-type brood sow. She was bred to a purebred Chester White boar, and in the spring of 1919 she farrowed five pigs. In the fall of the same year she farrowed eight pigs, stock which any breeder of experience would be proud to own. The brood sow and 13 pigs raised by William realized $400. Besides two years of profit and experience, he provided the home table with meat, opened a bank account, and helped his family purchase a small farm and build a comfortable home.

TENNESSEE BANKERS FIND WAY TO HELP BOYS OWN PUREBREDS

"A pig in a poke" generally signifies a bad bargain, but not to the members of the boys' pig club of Tipton County, Tenn. These young business men are quite satisfied with the pigs they drew by lot one day last June at Covington, Tenn. Through the initiative of County Agent G. S. Hollingsworth, who has been untiring in his efforts to perfect the pig-club work, and with the assistance of the American Hampshire Breeders' Association, each of the eight banks in Tipton County imported 10 purebred Hampshire gilts from Illinois. Then the boy members of the pig club gathered in Covington to draw lots for their pigs.

The process is simple, but its effect upon impressionable boys is wholesome and far-reaching. The boy actually establishes a regular credit at his bank, a real business proposition wherein pigs replace the customary notes. In this case, each member of the club was given a number which entitled him to the pig with the corresponding number among the 80 in the pen. Reports indicate that every boy seemed sure that he had drawn the one best Hampshire in the lot, though a neutral person who examined the 80 pigs asserted that there was really very little difference among all the animals. All weighed about 50 pounds, and all were purebred Hampshire gilts, beautifully marked in black and white and of excellent build and conformation.

Each boy agreed to follow certain approved instructions in feeding and caring for his gilt and promised to exhibit his selection at a contest to be given in the county next fall. In fulfilling his contract with his bank he will return two pigs from the first litter produced by his sow, in discharge of his "note" due the bank. The sow, the remaining pigs of her first litter and all the pigs of future litters become the property of the boy.

Economists argue that there is no good bargain—that one party or the other is always the loser—but it is hard to find that fault in the pig club boys' bargains. The banks get two pigs for one; the boys get a purebred sow and all her potential litters in return for the care and food given the pig, and the county of Tipton is richer in one short year by two or three hundred purebred pigs. Uncle Sam and the county agent, who jointly form a sort of third party to the transaction, have the satisfaction of knowing that 80 farm boys have been given a financial interest in agriculture and a primary business education, which will mean success in later years.

FARM WOODLAND IN THE NORTH.

Farm woodlands amount to two-fifths of all forested lands.

There are about 53,000,000 acres of woodland.

In New England more than 65 per cent of all forested land is on farms, and in Ohio, Indiana, Illinois, and Iowa from 80 to 100 per cent.

The income to farms from timber products is estimated at about $162,000,000 yearly.

CANVASS OF FARMS SHOWS NEED FOR STOCK SELECTION

Averages taken from the accounts of 150 Maryland farms by the Office of Farm Management of the United States Department of Agriculture show how great is the necessity of properly selecting and caring for the farm live stock, and how important is its relation to the income. Farms where this feature was neglected earned only $76 a year from the live stock. Where the conditions were a little more favorable, but not yet "good," the returns crept to $285, and under "good" conditions the returns averaged $737 to each farm.

The same tests in Pennsylvania gave the three averages thus: "Poor," $413; "medium," $912; and "good," $1,215.

Farms in Wisconsin showing poor returns were actually operating at a loss, when medium care would have brought $500 and good care $740. Also, in Iowa, the "poor" returns showed an average loss of $70 to each farm, while the "good" farms paid their owners $1,339 a year for the care given the live-stock factor.

RECOGNIZES QUALITY IN PUREBREDS.

"I recently changed a registered Percheron stud because he lacked quality." This comment by a Virginia farmer who recently joined the "Better Sires—Better Stock" movement, is typical of sentiment in favor of not only purebred sires, but good purebreds. The farm of this live-stock owner is located in Page County and is stocked with cattle, horses, swine, sheep, and poultry. Approximately 200 animals are kept, the males all being purebred, and the females purebred, crossbred, and grade. There are no scrubs, which is explained by the breeder's additional statement, "I have never used anything but purebred sires."

Factors That Make 100 Pounds of Milk—Net Cost Varies Slightly With Seasons

A two-year study of the cost of milk production undertaken cooperatively by the United States Dairy Division and Purdue University, on a number of dairy farms in northwestern Indiana, has resulted in figures on the requirements for producing 100 pounds of milk in winter and in summer. To give permanent value to the results, these requirements were determined in pounds of feed, hours of labor, etc., and by substituting present costs and values for the various items a farmer can determine very closely what it is costing him to produce 100 pounds of milk at the present time.

Reduced to Figures.

In the summer months the requirements for 100 pounds of milk were as follows: Concentrates, 20 pounds; dry roughage, 27.4 pounds; silage and other succulent roughage, 60.1 pounds; hauling and grinding concentrates, $0.014; pasture, 0.04 acre; human labor, 2.2 hours; horse labor, 0.2 hour; overhead and other costs, $0.393.

In the winter months the requirements for production were: Concentrates, 38.6 pounds; dry roughage, 66.8 pounds; silage and other succulent roughage, 147.6 pounds; hauling and grinding concentrates, $0.03; bedding, 20.3 pounds; human labor, 2.5 hours; horse labor, 0.3 hour; overhead and other costs, $0.385.

It has been generally believed that the cost of producing milk was considerably higher in winter than in summer; and while this holds true as far as the gross cost is concerned, the figures obtained in this investigation show that the *net* cost of producing 100 pounds of milk from November to April was only 1.8 per cent higher than the cost from May to October, inclusive, and that the total cost varied only slightly from month to month within each of these seasons. This small difference between net costs of production during winter and summer is largely due to the greater credit allowed for manure during the winter season.

Prices Fluctuate.

The price received for the milk, however, fluctuated sharply from month to month.

Further details on requirements for milk production, including such factors as cost of keeping a cow for one year, cost of keeping a bull, proportion of work performed by each class of labor, percentage relation of various factors in the cost of production, and other details, are presented in Department Bulletin 858, Requirements and Cost of Producing Market Milk in Northwestern Indiana, which may be obtained from the United States Department of Agriculture on request.

GRAIN BINS SHOULD BE RAT-PROOF.

Are the rats and mice getting in your stored grain? All corn cribs and grain bins should be carefully inspected to see that they are rat and mouse proof. A concrete foundation for storage buildings is advisable whenever it is practicable.

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Secretary of Agriculture, EDWIN T. MEREDITH.
Executive and administrative head of the department.

Assistant Secretary, ELMER D. BALL.
Assists in administrative duties of the department.

Solicitor, R. W. WILLIAMS.
Is legal adviser to the Secretary and the heads of the several branches of the department, conducts its legal work, and represents it in all legal matters.

Office of Farm Management, H. C. TAYLOR, *Chief*.
Studies the details of farm practice from a business standpoint, with a view to determining the most efficient methods of operation.

Weather Bureau, CHAS. F. MARVIN, *Chief*.
Conducts meteorological investigations; issues weather maps; handles all work relating to climate, storm warnings, frost warnings, etc.

Forest Service, W. B. GREELEY, *Forester*.
Administers the national forests and develops use of their resources; directs all research work relating to forestry and forest utilization.

Bureau of Animal Industry, J. R. MOHLER, *Chief*.
Studies and gives information regarding live stock; conducts the meat-inspection and quarantine work.

Bureau of Plant Industry, WM. A. TAYLOR, *Chief*.
Investigates problems relating to plants and plant industries.

Bureau of Chemistry, CARL L. ALSBERG, *Chief*.
Enforces the Food and Drugs Act; investigates questions of agricultural chemistry.

Bureau of Soils, MILTON WHITNEY, *Chief*.
Surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Crop Estimates, LEON M. ESTABROOK, *Chief*.
Collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Bureau of Entomology, L. O. HOWARD, *Chief*.
Studies insects in their relation to agriculture.

Bureau of Biological Survey, E. W. NELSON, *Chief*.
Studies wild birds and animals, their distribution, habits, and relations to agriculture; administers the Federal bird and game reservations and the Federal laws protecting game and regulating the importation of birds and animals; controls noxious mammals, and experiments in fur farming.

Bureau of Public Roads, THOS. H. MACDONALD, *Chief*.
Studies and supplies information regarding road making, road management, road maintenance, farm irrigation, farm drainage, and rural engineering and architecture.

States Relations Service, A. C. TRUE, *Director*.
Supervises the use of Federal funds for agricultural experiment stations and agricultural extension work; investigates agricultural education, and food, dietetics, clothing, and household equipment and management.

Bureau of Markets, GEORGE LIVINGSTON, *Chief*.
Investigates problems pertaining to marketing and distribution of farm products. Conducts market-news services and food products inspection service. Enforces United States cotton futures, grain standards, and standard container acts, and administers the United States warehouse act. The chief of this bureau is also immediately in charge of stockyard supervision work and acts as liquidating officer for the wool section of the War Industries Board.

Division of Publications, EDWY B. REID, *Chief*.
Supervises the editing, printing, and distribution of the publications and press material of the department, and directs the illustrations, exhibits, motion picture, and related publication and information work.

Federal Horticultural Board, C. L. MARLATT, *Chairman*.
Assists in the enforcement of the Plant Quarantine Act of August 20, 1912.

Insecticide and Fungicide Board, J. K. HAYWOOD, *Chairman*.
Assists in the enforcement of the Insecticide Act of 1910.

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Weekly News Letter

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GOOD CARE OF LIVE STOCK MEANS GOOD CARE OF HOMES

Only Profitable Animal Is One That Is Cared for Well.

Improving Live Stock Is Merely Following the Practices of Successful Breeders— Merely Owning Purebreds Is Not Enough— Must Handle Them Intelligently.

As a rule, better stock means better homes and better homes better stock. There are exceptions, of course, but when you think of the one it is very likely that you think of the other also.

Even if you are making no effort to grow high-grade stock or purebreds you are apt, after taking more pride in your home and your buildings, to take better care of the ordinary stock on your farm. An expert can get better results with less fuel from an old and poor heating plant than a slipshod person will get from a high-grade outfit. The most money is not always made with the highest grade or purebred animals. There are some men who make really good returns by handling good grade animals in an intelligent, practical way.

Good Handling Necessary.

The thoughtful farmer knows that the only profitable animal is the well-cared-for animal. Many a man who is not at heart very kind has learned the lesson—so far as cattle are concerned—that the exercise of consideration and gentleness means the saving of dollars. Very few men are mean enough to be mean when they know it hurts their pocketbooks. Anyone who gets the notion that it pays to give the best possible attention to the animals he has, even if poor, will not need much argument to convince him that better-bred stock will yield him still better results.

In some of the older-settled regions of the United States there are men who have stock that is bred well enough but has been handled in so shiftless a way that the animals might just as well be scrubs. In some of these cases the advent of an "up-and-coming" neighbor has worked a change of conditions.

In the more progressive communities organizations—county breeders' associations, extension workers of universities, and county agents—have worked wonders and produced splendid results. Boys' and girls' live-stock clubs have been able to bring reforms that no other agency could reach. Occasionally the older men who have never had very good ways and have become set in them are reached only through the kiddies.

Following Good Practices.

About the first thing that may be done toward getting better stock and better homes is to check up on conditions as they are and see the many ways in which they may be improved. But most people are not able to make the best of what they have. A man who lets his buildings and fences fall down, pays no attention to rotation of crops, lets his manure leach away into the creeks, forgets or neglects to feed and care for his stock regularly, and lets his wife go out to pump water and split wood is apt to instill into the minds of his children the idea that nobody is ever a farmer who is smart enough to be anything else. On the other hand, one who maps out his course and lets no season go by without making some improvements in his way of doing things will surely find himself getting better animals and gaining in self-respect and importance, not only to himself but to the community as well.

> **THE MAN WITH SCRUB PUREBREDS.**
>
> **The one who thinks all he needs to do to acquire fame and wealth is to buy a lot of purebred cattle, hogs, horses, or sheep, and then proceed, to let them shift for themselves will soon earn the reputation of "the man with the undesirable purebreds." He will find that his wealth is not the kind the banker will recognize.**

Gradual, continuous live-stock improvement has been practiced for many years by the most successful live-stock farmers everywhere. Improving live stock—grading up, eliminating the

(*Continued on page 8.*)

SECRETARY MEREDITH ORDERS HIGHER RATES DISCONTINUED

Forbids Commission Men to Increase Charges for Sale of Live Stock.

Affects Commissions on Live Stock Shipped in Car Lots by Single Owners—Action Follows Order Against High Charges on Cooperative Shipments.

Secretary of Agriculture Meredith has ordered licensed commissioned men at the principal stockyards of the country to discontinue the schedule of increased commission rates on the sale of live stock put into effect August 2, 1920. In his order the Secretary declared that the increases were unjust and forbade the commission men to charge commissions in excess of those in effect July 1. The commission men were given until August 21 to comply with the Secretary's order, which was made under authority of the food-control act.

Commission Men Notified.

The orders went to commission men in Chicago, Kansas City, Omaha, and National Stockyards at East St. Louis. Also, the Secretary is calling upon the secretaries of live-stock exchanges at stockyards where the Department of Agriculture has no agent, for schedules of commission charges in effect at their respective places. Any increases found in rates at these stockyards will be ordered discontinued also.

The increases objected to by Secretary Meredith ranged as high as 25 per cent, and included commissions on cattle, calves, hogs, sheep, and goats shipped in car lots by single owners. This action by the Secretary was along the line of that taken some days previously, when he fixed commission rates to be charged at Chicago on car-lot shipments of live stock having more than one owner.

"In 1918 and 1919 the Bureau of Markets of the Department of Agriculture investigated the live-stock commission business with a view to ascertaining whether

or not the income from rates being charged at that time would justify a conclusion that rates were in violation of the department's regulations," declared an official of the department, in discussing the order. "This information is the principal data on which we based an opinion at this time that the recent increase in rates is unjustified. Furthermore, at least one other increase has taken place since our information was secured and with which the department did not attempt to interfere."

Under the food-control act commission men are required to take out Federal licenses for doing business. The department is empowered to prescribe regulations for their operation.

FINDS NO TRACE OF DUMPING OF POTATOES AT WILMINGTON

As a result of a thorough investigation, the United States Department of Agriculture branded as having "no foundation whatever" reports that large quantities of potatoes were recently dumped into the Delaware River near Wilmington for the purpose of keeping up prices. Numerous inquiries as to the truth of the reports led the Bureau of Markets to send a representative to Wilmington to make a personal investigation of the matter at first hand.

No evidence whatever of dumping was found, according to his report to the department. The rumor was found to have been the result of gossip which had grown to considerable size through circulation. Railway officials, dealers, city health and market officials, and numerous persons involved in the circulation of the reports were interviewed. No one was found, however, who could substantiate the story in any particular. One railway employee through whom the story was traced declared that during his 15 years' experience on the railway he had never seen food dumped.

The department has on several previous occasions investigated similar reports of dumping food stuffs. Frequently such reports were based on the dumping of small quantities of condemned produce. The department never has found a case where any quanty of merchantable produce, upon which the freight had been paid, has been dumped.

Purity and abundance are the two essentials of water supply. Wells and springs are the usual sources of farm water, but both may easily be contaminated, and the vicinity should therefore be inspected for possible sources of pollution.

LOWERING OF FOOD PRICES DEPENDS UPON DISTRIBUTION

Standardization Is the Essential Basis For Better System, Specialists Say.

Uniform Methods of Marketing Farm Products Necessary to Effect Economies—Standards Should Be Fixed, not Only for Products But for Containers Also.

It is generally agreed that if food costs are to be lowered a more economical system of distribution of farm products must be perfected and placed in practical use.

Standardization, say experts of the Bureau of Markets, United States Department of Agriculture, is the essential basis for such a system. This means not only standard grades for fruits and vegetables, but standards for the containers in which they are packed.

Should Sell Produce by Weight.

The Bureau of Markets is charged with the enforcement of the United States standard container act, which provides only for standard capacities for grape and berry baskets used in interstate commerce. The application of this law has resulted in the widespread use of these containers in intrastate commerce also, for shippers have come to appreciate the benefits derived from the use of uniform methods of marketing such fruits.

Standardization of larger shipping containers, such as hampers and round-stave baskets is equally desirable, say the bureau's experts. Of course, the best method is to sell produce by the pound, but where it is impracticable to sell by weight uniform containers should be used. Bushel baskets of peaches from Georgia and Colorado should contain the same quantity of peaches. The same is true of any other food commodity shipped in hampers or baskets.

An illustration of how the present methods result in dissatisfaction is the case of a Florida producer who recently shipped potatoes to the New York market in a container with which the trade was not familiar. Although the potatoes were of high quality, difficulty was experienced in disposing of them. When they were finally sold the price was considerably lower per pound than that commanded by potatoes packed in the customary manner.

At present there are about 50 types of hampers and over 20 sizes of round-stave baskets in use. Many of these sizes are simply the outgrowth of custom in various shipping localities; others are used for the express purpose of deception. And aside from the confusion and uncertainty that result from the use of dozens of different kinds of containers, millions of dollars are annually lost through destruction of produce in transit on account of the weak construction of the containers used.

Would Reduce Number of Containers.

Many large growers, shippers, and basket manufacturers appreciate the desirability of reducing the number of these containers, and a nation-wide movement is on foot to eliminate many of them. Cooperative selling organizations are already doing much to promote uniformity and standardization. It means money to them not only because of the familiarity of the trade with the containers used but in permitting methods of loading into cars that reduce the likelihood of breakage to a minimum.

After a careful canvass of the situation the Bureau of Markets believes, and in this those who have studied the problem are of the same opinion, that five standard hampers and four standard round-stave baskets are sufficient to meet all shipping requirements. The specifications provide for volume, dimensions or shape, and strength. In addition to the advantages of uniformity, the adoption of these sizes will enable the railroads to work out loading rules that will permit of a more intensive utilization of car space, and which will be bound to reduce to a minimum claims on account of damage in transit.

Proposed Dimensions for Standard Hampers.

Capacity.	Inside dimensions.			Length of stave.	Thickness of stave.
	Diameter of top.	Diameter of bottom.	Slant height.		
1 peck	10¾	6½	9¾	10½	1/16
½ bushel	13	8½	12	12½	1/16
1 bushel	15¾	9	19	20	¼
1½ bushels No. 1	16½	9	26	27	⅜
1½ bushels No. 2	16½	10	23	24	⅜

Proposed Dimensions for Standard Round Stave Baskets.

Capacity.	Inside diameter at top.	Average inside depth.	Number of stave.	Thickness of stave.
½ bushel	13½	8½	29	3/16
1 bushel	17	10¾	20	3/16
1½ bushels	19	12¾	24	3/16
2 bushels	21	13¾	24	3/16

Much soil fertility is lost every winter by soil washing or erosion. Put a stop to it by keeping the hilly lands in sod, planting a cover crop, providing underdrainage, filling the gullies with brush, etc.

CAUTIONS PUBLIC AGAINST IMITATION ORANGE JUICE

Many So-Called Orange Drinks Contain No Fruit Juice.

Colored with Dye to Imitate Orange Juice, and Flavored with Oil from Orange Peel—Public Should Read the Label Carefully.

All is not orange juice that is orange colored these days. Nor is it orange juice because it comes in a bottle with an attractive picture of that fruit on the label, explain officials of the Bureau of Chemistry, United States Department of Agriculture. The wise in this era of soft drinks read the label critically before they buy or drink the contents of a bottle, the advice of the Federal food officials goes on.

The juice of the orange is one of the most healthful of beverages, they say. It contains organic acids of medicinal value and substances known as vitamines, which are essential to health. But the trouble is that many of the so-called orange drinks which are on the market contain none of the real orange juice. These imitations are usually concocted of sweetened, artificially carbonated water, colored with a dye to imitate orange juice and flavored with a little oil from the peel of the orange. While they may not contain ingredients injurious to the health of adults, they are imitations which lack the medicinal qualities characteristic of fruit juices. They should not be used in place of genuine orange juice, the officials say, especially as a food for babies and young children. A few of the bottled orange drinks do contain some of the genuine fruit, but when orange juice is needed in the diet of children the best way to obtain it is to buy the fruit and press out the juice.

Should Read the Label.

The information as to what a bottle of soft drink contains ordinarily can be found on the label, but sometimes a magnifying glass may be required, if the thirsty one does not have strong eyes. The manufacturer is usually very modest in displaying this information, but to conform with the Federal food and drugs act he must place it on the label. The terms "ade," "squash," "punch," "crush," and "smash" can only be applied correctly to beverages which contain the edible portion of the fruit or juice of the fruit named on the label, Bureau of Chemistry officials say, but this year many beverages with fanciful names, beverages which are imitations of fruit juices and which have only the odor or flavor of the fruit of which they purport to be the juice, are being placed on the market.

Will Enforce Law.

The officials in charge of the enforcement of the Federal food and drugs act have instituted proceedings to require correct labeling of the products coming within the jurisdiction of that law. In the meantime, pending judicial determination as to what is correct labeling of these products under the law, some manufacturers are continuing to put their deceptively labeled drinks on the market. Attention is called to the fact that the soft-drink industry is largely a local industry. Many of the bottled soft drinks are sold and consumed within the State where they are made. Such drinks are not subject to the Federal food and drugs act, which applies only to foods and drugs that enter interstate or foreign commerce or that are made or sold within the District of Columbia or a Territory.

Modifies Restrictions Against Spread of Cattle Tuberculosis

Modifications in the restrictions on interstate shipment of cattle imposed for the prevention of the spread of cattle tuberculosis are announced by the Bureau of Animal Industry of the United States Department of Agriculture. In order that live-stock shippers may more readily understand the restrictions, the entire regulation has been redrafted and the language clarified.

One of the modifications is for the aid of emigrants who live in sparsely settled sections of the country where it would be very expensive to have their cattle tested before moving them to another State. Such shipments usually do not pass through public stockyards, and veterinarians are not always available in such sections. The new regulation, therefore, permits emigrant shipments to be tested en route or at the destination. Permission to do so, however, must first be received from the bureau inspector in charge of tuberculosis eradication work in the State of destination, or from the proper State official.

Data gathered from the various State and bureau field workers, it is said, clearly indicate that the tuberculosis test can be shortened two hours without interfering with its efficiency. A modification, therefore, was made permitting the registering of temperatures to be discontinued at the eighteenth hour after the injection of tuberculin instead of the twentieth hour.

It was found advisable, too, to remove the time limit in which pure bred tuberculous cattle may be returned to their original owners. The present regulations require them to be reshipped within four months. The redrafted regulation places heifers on the same basis as all other female cattle subject to the test.

FIVE-CENT PIECE STARTS BOY ON ROAD TO SUCCESS

Van Palmtree is a 13-year old boy who lives in Panola County, Miss. Van belongs to one of the many boys' agricultural clubs in that State. Many of the Mississippi club boys have had unusual success with their club projects, but Van's success is noteworthy because of its small beginning.

In April, 1916, 5 cents was given him by his teacher as a reward for unusually good lessons and good behavior one day at school. With this money he bought a chicken. It was crippled, hence its low price, but much coddling on his part saved its life, and it grew to maturity. The next summer she raised a brood of chickens which were sold for $1.50. With this money Van bought a pig. It was a runt pig, but care and good feeding for a few months made it well worth the $9.36 for which its owner sold it.

Immediately the young financier bought a heifer calf with the price paid him for the hog. Last year and again this she presented her owner with a heifer calf, so he now has a little herd of three, all the outgrowth of that one nickel which he invested four years ago.

The club boy's cattle are scrubs, but he is hoping to have something better some of these days, and with a boy of his kind, to plan is to do. So it would not be surprising if the nickel continued to grow and become a pure-bred herd before Van is 16.

FEEDING STOCK IN TRANSIT.

When the distance is such that a live-stock shipment to destination can not be made within the time provided under the Federal 28-hour law, animals must be unloaded, fed, and watered. The railroads which have the heaviest long-distance shipments provide feed-in-transit stations for this purpose at intervals along their lines. Railroads which do a small live-stock business often are without feed-in-transit stations, and the shipper patronizing these lines must make his own arrangements for feeding and watering.

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FRUIT EXPORTS INCREASE WHILE IMPORTS FALL OFF

Despite the greater consumption of fruits in the United States during the past 10 years, there has been a material increase in American fruit exports, while imports have decreased.

According to figures compiled by the Bureau of Markets, United States Department of Agriculture, the average yearly exports of dried and fresh fruits for the prewar period 1910–1914 were approximately 504,911,000 pounds. With two low years the average for the period 1915–1919 was 518,259,000 pounds, an increase of 2.6 per cent. The 1910–1914 imports averaged 252,708,000, as compared with 109,321,000 pounds for 1915–1919, showing an annual decrease of 57 per cent since 1914.

The fresh-fruit export trade of the United States is chiefly in apples, lemons, and oranges; and of dried fruits, apples, apricots, peaches, prunes, and raisins. The imports of fresh fruits are of bananas, grapes, lemons, and oranges; and of dried fruits, currants, dates, figs, olives, and raisins.

American apples are sent to 80 different countries, reaching all parts of the globe. There is a constantly increasing demand for American lemons and oranges, Canada and the United Kingdom being the largest purchasers. The decline in imports of grapes is accounted for by the rapid development of the grape industry in America. The same reason is given with regard to lemons. In prewar days as much as 150,000,000 pounds of lemons were imported annually from Italy, but the imports have declined greatly with the increase in American production. Several million pounds of oranges used to be imported from Jamaica, Mexico, and Italy, but very few are now brought into this country.

BELIEVE FREEZING STORAGE COULD BE GIVEN WIDER USE

That the utilization of freezing storage for the preservation of berries, other small fruits, and tomatoes could be profitably extended is the belief of specialists of the Bureau of Markets, United States Department of Agriculture. Many ice-cream manufacturers and canners would be benefited by adopting practicable methods of holding such products for manufacturing purposes, say the specialists.

It is pointed out that the preservation of fruits by freezing is cheaper than canning them, especially when tin containers are scarce and costly, as at present; and that the frozen fruit, held at the proper temperatures, has a more natural flavor than canned or dried fruit. The experimenters found fruit preserved by freezing to be fully as satisfactory as fresh fruit and superior to canned or dried fruit for use in making ice creams and sherberts, and for cooking into pies, preserves, jellies, and other desserts and confections. The frozen fruits after thawing are not well suited for eating alone in a raw state, but are considered very palatable when eaten before they have completely thawed. When used as ingredients for desserts and confections best results will be obtained if they are combined before they are free from ice.

CUTS FIRE INSURANCE RATE ON COTTON STORED IN BOND

Fire insurance companies recently announced that when a warehouseman joins the United States warehouse system the fire insurance rate on stored cotton is automatically reduced 25 per cent. This is tangible recognition of the value of the Government inspection of warehouses and of the other regulations of the United States warehouse act.

The purpose of the act, with regard to cotton, is to standardize warehousing and to provide for the issuance of a standardized bonded-warehouse receipt of unquestioned value and integrity, backed by a bond to the United States Government. The Government authorities do not interfere in any way with the warehouseman's management and control, and require only that the conditions of the act, which are nothing more than good business practices, be observed. Above all, there is no so-called red tape. The inspections made four times a year include a check of all canceled receipts against receipts issued and of the quantity of cotton on hand. One short monthly report relating to receipts and deliveries of cotton and the amount of insurance carried, if any, is required of warehousemen.

The receipts of bonded warehouses under the warehouse act are among the best possible collateral. Local bankers fully appreciate their value, for they can be more readily rediscounted than the receipts of warehouses that are not bonded. Any building that will adequately protect cotton from the weather is acceptable as a warehouse to the United States Department of Agriculture, which administers the act.

FEDERAL GRAIN STANDARDS PREVENT PRICE INEQUALITY

Misunderstandings as to the application of the Federal grain standards and as to the benefits to be derived from the sale of grain upon a grade basis have been the cause of considerable dissatisfaction among producers and country elevator operators, but with the passing of these misapprehensions an ever-increasing sentiment is being manifested in favor of the purchase and sale by grade at country points.

The old system of basing the price at which wheat or other grain was bought from the farmer upon the average quality of the crop in any community or section was totally unfair to the producer of good grain. Under the "mine-run" basis of purchasing grain the producer of good grain received no more for his clean, heavy wheat than did the producer of light weight and otherwise inferior grain. Instead of a premium upon heavy grain, a premium was paid upon inferior products.

The application of Federal grain standards is calculated to prevent such inequality, and as experience is being had under the grading system growers are finding that the purpose sought is being accomplished.

TB. ERADICATION IN 45 STATES.

The campaign to eradicate tuberculosis from live stock is now being conducted in 45 States in cooperation with the live-stock owners and the respective State live-stock sanitary officials. Arrangements are being made to have other States engage in the work. However, State and Federal officials can not prevent losses from the disease without the assistance and hearty cooperation of the owners.

Concrete Feeding Floors Save Money—Early Autumn Best Time to Build Them

The high prices of foodstuffs have turned the farmer's attention to means whereby the cost of feeding corn to hogs may be decreased. It has been found that there is a saving in corn when it is fed on a properly constructed feeding floor. Old plank or wood floors are not desirable, as they furnish harborage for rats and mice. Concrete feeding floors do not have this objection. They also are an aid in the conservation of fertilizer and in the sanitation of the feed lot. The fall days, before harmful frosts set in, offer an excellent time for the construction of such a floor.

The site of the feeding floor should be well drained and situated conveniently with respect to the feed supply, water, barns, and lots. Where the ground never freezes, drainage foundations are unnecessary. If the location selected is poorly drained, provision should be made for good underdrainage. The floor must be graded or sloped so that water will not collect and freeze on it in winter and so that manure washings may be caught and carried, by means of gutters, to a watertight concrete manure pit.

The methods of constructing the several kinds of concrete feeding floors for cattle, hogs, and sheep are quite similar. The structure should be made 5 inches thick. In constructing feeding floors for hogs the concrete apron around the edge should extend deep enough into the ground so that hog wallows will not undermine the floor and cause it to break off.

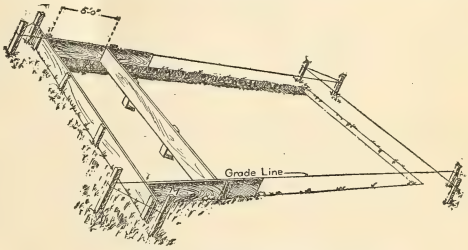
Use Clean Sand and Gravel.

Sand for concrete should be clean and should have grains grading in size from fine to coarse. With dirty sand no amount of cement will make strong concrete. Bank-run gravel, just dug from the pit or taken from the stream bed, seldom runs even and rarely has the right proportions of sand and pebbles for making the best concrete. The mixture most suitable has one part sand and two parts gravel, measured by volume, in which all sizes passing through a quarter-inch screen are considered sand. As there is generally too much sand for the gravel, it is advisable to separate the sand from the gravel and later remix them in proper proportion. For concrete feeding floors no pebbles larger than 1 inch should be used.

A fairly rich mixture makes the best concrete floors. A good mixture consists of one part Portland cement, two and one-half parts sand, and five parts screened gravel or crushed rock. One bag of cement may be considered as holding 1 cubic foot of loose cement. This is a convenience in measuring the proper proportions as the cubic foot may be used as a unit in measuring the aggregate.

In mixing the concrete, the cement, sand, and gravel should be thoroughly mixed in a dry state until the mass is of uniform color. Just enough water then should be added so that a small amount of water will appear at the top when the concrete is well tamped in place.

Proper curing of the floor is as important as thorough mixing of the concrete. In hot weather each newly laid section should be shaded from the sun for three days. In any season, as soon as the concrete has set up so that water will not wash out the cement the new concrete should be sprinkled and kept wet for 48 hours. Thereafter it should be flooded with water morning and noon for a week. At the end of that time the floor may be used for feeding, but heavily loaded wagons should not be allowed upon it for at least one month nor should loose animals be permitted on its surface.

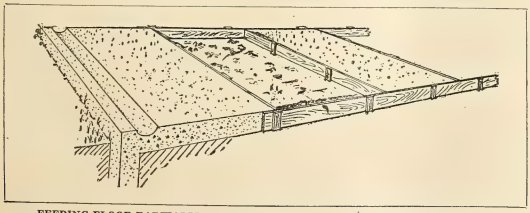


FORMS FOR A CONCRETE FEEDING FLOOR.

The construction of feeding floors is similar to that used in building concrete sidewalks, only on a larger scale as shown in the illustration.

The cost of a concrete floor is dependent upon so many conditions that no reliable estimate can be given. The price of materials and labor vary considerably in different sections. On many farms sand and gravel can be easily obtained from a creek or gravel bank, while in other instances it must be hauled some distance.

Full details and instructions for building concrete feeding floors are found in Farmers Bulletin No. 481—Concrete on the Live-Stock Farm. This bulletin also contains other suggestions of interest to the live-stock farmer. It may be obtained by addressing the Division of Publications, U. S. Department of Agriculture at Washington, D. C.



FEEDING FLOOR PARTIALLY COMPLETE, SHOWING TROUGH TO MANURE PIT.

Two-thirds of the great wheat crop of 1919 was marketed by farmers in the four months, July to October, and the largest fraction for one month was nearly one-quarter in August, or at once after harvest and thrashing. In the average of the preceding 10 years, September is the leading wheat-marketing month, followed in order below by August, October, and July.

Meade Cotton Should Be Roller Ginned—Fear Saw Ginning May Hurt Reputation

Reports that several hundred acres of Meade cotton are being grown in Arkansas and Texas and more than 2,000 acres in Hayti this year have caused cotton specialists of the Bureau of Plant Industry, United States Department of Agriculture, to express some concern over the effect this may have upon their efforts to bring Meade cotton to the front in Georgia as an upland long-staple variety. There is no reason to expect that a variety of the special character of the Meade cotton can be grown to advantage in all parts of the cotton belt.

Replacing Sea Island.

Meade cotton, developed by the Bureau of Plant Industry, is now replacing the Sea Island cotton in Georgia and South Carolina. It is earlier and more productive than the Sea Island cotton in the presence of the boll weevil and produces fiber of the length and quality of Sea Island, so that the advantage to the farmer is great. The attention that Meade cotton has attracted in Georgia has led, however, to efforts being made to introduce this variety into many other districts in advance of any recommendation by the department.

An essential requirement for the production of good long-staple fiber is that the plants shall not be checked by drought, which makes the fiber weak and irregular and renders the crop difficult to pick, because the bolls are withered and split prematurely and do not open to the full extent of those that are normally developed.

An important advantage of Meade cotton in the Sea Island districts, but a disadvantage in other parts of the cotton belt, is that this variety is better adapted to roller ginning, on account of the seeds being only slightly fuzzy, like the Sea Island cotton. Though good prices have been secured in some cases for saw-ginned Meade fiber, there have also been complaints that such fiber is badly gin-cut, which is likely to injure the commercial standing of the variety unless the need of roller ginning is clearly understood by farmers, the buyers, and the manufacturers.

Aim to Keep Grade High.

It has been the aim of the friends of Meade cotton to keep the product on as high a grade as possible, and it has been selling on the market for prices equal to those paid for Sea Island of the same grade. It is already being produced in considerable quantities and is the nearest approach to Sea Island—now practically eliminated by the boll weevil's invasion—in length and fineness of fiber. Tests of the strength and spinning qualities of the fiber have given favorable results, so that the possibility of substituting this type of cotton for corresponding lengths of Sea Island is definitely indicated.

Meade produces earlier than Sea Island and develops bolls nearly twice as large. A heavier crop can be set in a short period of time, and the fiber matures in advance of Sea Island—all tending to avoid damage by boll weevil. Even when a large proportion of the buds or young bolls are shed, as a result of severe weevil injury or other unfavorable conditions, the Meade rows often yield two or three times as much as the Sea Island. Buyers accept Meade fiber as practically equivalent to the Sea Island. At present there are about 5,000 acres planted in Meade in Georgia and South Carolina, about 2,000 acres being especially guarded as the basis of a supply of pure seed.

POOR GRADE RUBBER RINGS MAKES TESTING NECESSARY

With fruit, sugar, and vegetables at their present high levels the canner who does not test the rubber rings she uses is taking a long chance as to whether the 20 to 50 cents worth of good material in the can will keep or not. This year the country is flooded with poor rubber rings, and unless the housekeeper tests the rings she is using the chances are good that her canned products will not keep. The cost of everything entering into retailing rings has increased, and in order to continue selling them at the old price and to make a profit many manufacturers have reduced the quality of the rings they are putting out. The United States Department of Agriculture gives a number of tests which may be used to determine whether a rubber ring has the requirements that it should have or not. One is the stretching test.

A 6-inch piece is cut out of a ring; take hold of the end so there are 4 inches between the fingers. Stretch the piece along a ruler until the fingers are 10 inches apart. The sample should not break and should return when released to its original length. The tensile strength is as follows: Fill a lightweight pail with 1 gallon and 7 pints of water (total weight approximately 17 pounds). Place the jar ring around an empty spool; pass a wire through the center of the spool and fasten to handle of the pail; then pass the round handle of a wooden spoon or broom through the ring and lift. The ring should not break. If rings will stand these two tests they are not likely to give trouble in canning.

Parts of Louisiana and Arkansas Requarantined Against Cattle Tick

The Federal quarantine for cattle-fever tick has been replaced on the parishes of Beauregard, Caldwell, Grant, Jackson, Red River, Union, Franklin, Pointe Coupee, and Washington in Louisiana, and Ouachita County, Ark., by order of the United States Department of Agriculture, effective September 15, 1920. The effect of the quarantine is that cattle can not be shipped interstate from these regions except under the regulations promulgated by the Secretary of Agriculture.

The first five parishes named were released from quarantine on December 1, 1918, and the remaining four parishes named and Ouachita County were released December 1, 1917, but the cattlemen and local authorities in these regions have failed to cooperate in the "mopping-up" work, and ticks have multiplied until they now constitute a menace to nearby parishes and counties that are tick free or that are eradicating ticks.

All other released regions in Louisiana and Arkansas are doing satisfactory "mopping-up" work, and it is believed that no other replacement of quarantine will be found necessary.

PROVES VALUE OF GRADING.

It has been demonstrated many times that in the markets of the world the seller with the best graded products is the favorite, because graded goods are standard and the buyer knows what he will get when he buys. Standardization establishes a common language between the buyer in one country and the seller in another, which creates understanding and confidence and prevents disputes.

A national grading system usually provides for authorized national inspectors to pass upon the goods and thus puts into effect a uniform standard application of the grades established, whatever they may be, that can not be maintained unless the system is nation wide in its scope. In fact, experience has shown that the decisive factor in the development of foreign business often hinges on the proper standardization and grading of the products to be sold.

Show the Neighbors What You Produce—Community Fairs Stimulate Production

If a community bloweth not its own horn by some form of community activities, verily by whom shall it be blown?

Advertisers have discovered that good characteristics of their products which are so familiar to them as to seem commonplace are often not so well known to the great buying public. Goods must be talked about if business is to be secured. The same holds true with communities. The excellence of neighborhood products and the special lines in which various individuals excel may seem like a very old story to those immediately concerned, but there are plenty of folks near by who have not heard this story, or, if by chance they have heard it, it is very much worth while from a business standpoint to repeat it—and more than once.

Exhibits Stimulate Business.

It follows that promoting some form of community fair, such as an exhibit of local products, is profitable from many points of view. It stimulates better production of stock, farm produce, and garden truck. It engenders community pride, and advertises in an attractive fashion good products and those who produced them.

As a result of careful study of the methods of conducting community fairs specialists in the United States Department of Agriculture outline a definite procedure for those interested in promoting such neighborhood events. Community fairs—the successful ones—are not gotten up in a day or a week. Preparations should begin weeks in advance. It is not too early now to begin planning for an exhibit this autumn. The first step is to get together the leaders of different organizations for a discussion of the proposed fair. At this meeting a general outline of the plan to be followed should be presented for approval. The meeting, to be thoroughly representative, should be well advertised with posters, newspaper notices, and post cards addressed to each family.

If the community decides to hold a fair, an organization should be formed, officers elected, and committees appointed. The latter should include committees on amusement and entertainments, arrangements, decorations, and publicity. These are general committees. In addition, there should be exhibit department committees for such exhibits as live stock, farm products, orchard and garden products, women's work and fine arts, school and club exhibits, and historical relics.

Too much emphasis can not be placed upon properly advertising the fair through articles in the local papers, printed handbills, handmade posters, notices read, preferably several times, in the schools and churches, and in various other ways. The publicity committee should give special attention to advertising in neighboring communities, extending an invitation in such cordial terms that many who ordinarily do not visit the community holding the exhibit will be induced to do so.

Grouping of Exhibits.

The exhibits should represent as nearly as possible the normal production of the community, for one of the purposes of such a fair is to stimulate interest in increasing the quantity and improving the quality of the average produce, as well as giving special recognition to the leaders in different lines. Freak exhibits are to be avoided. The committees should make it a point personally to solicit exhibits from all persons eligible, not failing to emphasize the business benefits which may result.

Satisfactory results are usually obtained by grouping certain classes of exhibits. In the live-stock department, horses, cattle, swine, poultry, and pets are exhibited. In the farm-products department are shown grains, seeds, grasses, forage crops, beans, peas, peanuts, potatoes, together with dairy products and bee products. The orchard and garden department includes such exhibits as fruits and vegetables, ornamental shrubbery, and flowers. The women's work and fine-arts department has large possibilities and can include a great variety of products prepared by the mothers and daughters.

Much of the success of the exhibit depends upon securing judges of ability and experience—preferably persons from outside the community. Usually judges are available who can be secured at little or no expense.

Cash Prizes Not Necessary.

A community effort is most successful when the primary aim of an exhibitor is not to win money prizes as compensation for preparing his exhibit. Experience has proved that the awarding of money prizes not only makes the cost of a community fair prohibitive, but places the emphasis on money instead of the honor of achievement, and so tends to defeat one of the purposes of the event. Excellent results have been obtained merely by awarding blue, red, and white ribbons to designate first, second, and third prizes, respectively.

Such a fair as described here does not require the expenditure of large sums of money. No charges need be made for entry of exhibits or gate admissions. A small, fund, however, is needed for printing, general advertising, lumber for tables, shelves, live-stock pens, premium ribbons, decorations, etc. This can be raised either by subscription or by selling advertising space in the premium list or fair catalogue.

Persons interested in securing further information on the successful management of community fairs should write the United States Department of Agriculture for literature on this subject.

WIPING OUT CATTLE DISEASE SOLVES CONTROL WITH SWINE

Eradicating tuberculosis from cattle will practically solve the problem of controlling the disease among swine. That is the opinion of veterinary experts experienced in the handling and post-mortem examination of swine received at the principal market centers. By means of a simple and practical marker, hogs may be tattooed with distinguishing letters and figures, and when disease is found by post-mortem examination the identity of such animals is known. With a simple system of records it is thus possible to trace a shipment to the farm from which it came and stamp out infectious diseases at their source. Evidence shows that swine become infected with tuberculosis principally from cattle, either by following them in feed lots or pastures, by receiving infected dairy by-products, or by eating tuberculous carcasses.

EVEN WEIGHT, EVEN QUALITY.

In certain sections of the country the practice of "stuffing" a barrel, a box, or a bag with under-size and over-ripe specimens of fruits and vegetables is common. But no longer does this fool any one, say marketing experts of the Bureau of Markets, United States Department of Agriculture, for the buyers give slight consideration to the top of packages offered by these growers.

The grower who is scrupulously honest, filling his packages with equal quality fruit or vegetables throughout, finds a ready market for his produce. The buyers know precisely what to expect, and can always rely upon him.

Enables Growers to Get Better Prices—Many Warehouses Seek Federal License

Since the passage of the United States warehouse act in 1916 the Bureau of Markets, United States Department of Agriculture, which is charged with the administration of this legislation, has received approximately 300 applications for licenses. Half of these applications were received within the past year.

The advantages that accrue from the Federal licensing and bonding of warehouses storing agricultural products such as cotton, grain, wool, tobacco, and flaxseed are just beginning to be fully appreciated, say specialists of the Bureau of Markets. A continuous educational campaign has been conducted to accomplish this result, and the bureau confidently feels that a steadily increasing number of applications will be received.

Aids in Financing Crops.

The chief purpose of the act, which is not mandatory, is to establish a form of warehouse receipt that will be easily and widely negotiable as delivery orders or as collateral for loans, and therefore of definite assistance in financing crops. By licensing and bonding warehouses the integrity of the receipt is assured as evidence of the condition, quality, quantity, and ownership of the products stored. These receipts are approved as collateral for loans made by the Federal Farm Loan Board; and because of the high value of the paper, bankers generally are enabled to rediscount their loans to greater advantage, thereby securing cheaper money, which in turn should mean reduced interest charges for the growers. It is also a fact that in insuring cotton stored in Federally licensed warehouses reductions of from 10 to 25 per cent have been granted by rate-making agencies. Thus the insurance underwriters give tangible recognition to the creation of a better moral class of risk and to the value of Government supervision and inspection.

A particular advantage to the producer who stores his product in licensed warehouses is that he is enabled to hold his goods under the best conditions yet devised, until such time as the market is ready to receive them. He practically receives his pay immediately, the low interest rate upon his loan being more than offset by "top-of-market" prices received when he finally sells his product.

Wool Regulations Issued.

Regulations for the licensing and bonding of wool warehouses recently were promulgated by the bureau. Provision is made for the accurate weighing and grading of wool stored, or to be stored, in such warehouses. The grading tends not only to increase the value of the wool and make it more readily marketable, but gives the grower information as to the quality or grade of wool he is producing, indicating how the wool and the flocks or bands may be improved to produce the most profitable quality. The grower knows that his wool is safe in such a warehouse and that it is properly handled, because of Government supervision and inspection.

Where the wool of the growers is being pooled, the place of assembling or storing it may readily be licensed by complying with the regulations. In this connection the plan of some of the associations which have shown a desire to become licensed is to have the growers turn their wool over to their association, which deposits it in a licensed and bonded warehouse, where the lots are graded and like grades are put together in large heaps or piles. The warehouse then issues receipts to the association which can be used as collateral. From the funds obtained the association can made advances to the individual grower.

A copy of the regulations and forms to be used in connection with licensing wool warehouses can be had upon application to the Bureau of Markets, United States Department of Agriculture, Washington, D. C.

FEEDING VALUE OF VELVET BEANS.

The principal value of the velvet bean is for winter grazing, and for that purpose it is one of the best crops which can be grown on the light soils and in the long season of the immediate Gulf coast, say specialists of the United States Department of Agriculture. It is usual to allow the crop to grow until killed by frost, after which it is grazed through the winter, as the vines and leaves decay so slowly that they retain their palatability a long time. The matured beans are quite hard when dry, but are eaten well in the fall, or whenever they become slightly softened either by rains or by lying on damp soil. The yield of seed from a fair growth of vines is usually from 20 to 30 bushels per acre, and much heavier yields are often secured. One hundred pounds of the pods will shell about 60 pounds, or 1 bushel of seed. They do not need to be shelled for feeding cattle, and make an excellent grain feed for winter use. Experiments made at the Agricultural Experiment Station of Florida indicate that for feeding 3 pounds of the beans in the pods are worth more than 1 pound of cottonseed meal.

A RECREATION PARADISE.

A lake 50 miles long, combining all of the wonders of the wildest fiord of Norway with those of the most beautiful mountain lake of Switzerland. That is Lake Chelan, in Washington, says a descriptive publication just issued by the Forest Service, United States Department of Agriculture. No more diversified or attractive recreation region can be found in the United States, it is said. Bold and rugged mountains challenge the most experienced climbers. Innumerable camp grounds are available for the tourist. There is splendid fishing for the angler, and trails lead up the numerous creeks, most of which are broken by cascades, to the high back country.

The new pamphlet, entitled "Land of Beautiful Waters," contains much information as to how points of interest may be best reached, the principal hotels, the location of public camping grounds, and how to obtain permits for constructing summer homes or permanent camps. A large map accompanies the publication, showing the principal trails, summer-home sites, location of hotels, camps, highways, etc. Copies of this bulletin may be had by addressing a request to the district forester, Forest Service, Portland, Oreg.

GOOD CARE OF LIVE STOCK MEANS GOOD CARE OF HOMES

(*Continued from page 1.*)

scrub, etc.—is merely following the practice of these successful men who for years have been keeping the best and "breeding the best to the best." It is well known that a good cow, for example, bred to a good purebred bull will usually produce a good calf. It is also well known that a better bull bred to a better cow will produce a better calf, and this applies to other kinds of live stock.

It was to emphasize this important practice that the United States Department of Agriculture, in cooperation with the different State agricultural colleges, inaugurated the "Better Sires—Better Stock" crusade to raise the general quality and usefulness of our animals. Not only the scrub sire is to be eliminated but the undesirable sire as well, even though he is a purebred.

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Weekly News Letter

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HUGE FUNDS NOW AVAILABLE TO AID STATES BUILD ROADS

Largest Apportionment Yet Certified Under the Federal Aid Act.

Amounts to $100,000,000, Three-fourths of Which Is Derived From Appropriation of 1919—Deduction of $3,000,000 to Be Made For Administration Purposes.

Unless Federal action is taken during the current fiscal year concerning Federal aid in road building the resulting uncertainty as to the future of this work will seriously handicap the States and cause the entire road-building program to suffer a serious setback, according to Thomas H. MacDonald, chief of the Bureau of Public Roads, United States Department of Agriculture. In discussing the need of Federal action this year, Mr. MacDonald points out that the last installments of Federal-aid funds, namely $100,000,000, became available July 1, 1920. When to this is added at least an equal amount of State funds, as required by law if States are to secure Federal aid, funds will be available sufficient to carry the road-construction program forward for the current year. But Mr. MacDonald points out that the States should know at least a year in advance what funds are to be available in order that plans can be made for future construction.

In the accompanying table are shown the last installments of the two Federal-aid appropriations (those of 1916 and 1919) and the apportionments to the several States. The totals represent the sums appropriated less 3 per cent set aside for administration. When these funds have been taken by the States no other Federal aid will be available unless further appropriations are made.

"The last apportionment of Federal funds to aid the States in road construction under the existing Federal-aid act became available July 1," said Mr. MacDonald. "This is the largest apportionment yet certified under the Federal aid act, amounting to $100,000,000, three-quarters of which is derived from the appropriation of 1919 and $25,000,000 from the original appropriation of 1916. A deduction of $3,000,000, or 3 per cent of the funds, will be made to provide for the expense of administering the Federal aid act by the Department of Agriculture. The balance of $97,000,000 will be divided among the States in proportion to their population, area, and mileage of post roads. The allotments to the several States from the two portions of the fund are given in the accompanying table of apportionment.

Formal Agreements Required.

"Under the law the States are required to enter into formal agreements with the Secretary of Agriculture for the construction upon which this money

(Continued on page 5.)

SENDS GREETING TO COTTON MEN IN SESSION.

Edwin T. Meredith, Secretary of Agriculture, sent the following greeting to the members of the American Cotton Association at their meeting in Columbia, S. C., recently:

"I send greetings to the officials and members of the American Cotton Association, farmers and business men, gathered at your meeting in Columbia to-day. Southern farmers deserve great credit for the faith, courage, and energy with which they have maintained crop production with a short labor supply, an unusually late spring, high costs of production, and economic pressure to reduce prices of farm products. I urge upon the farmers of the South a continuation of their program of safe and sane farming.

"This involves production of sufficient food and feed to make the farmers of the South self-sustaining, the growing of more legumes and practice of crop rotations to maintain soil fertility, increased production of pure-bred and high-grade live stock, the growing of cotton as a surplus cash crop, better farm management, and use of better farm machinery and equipment, to the end that production shall be more efficient and economic; and improved methods of storage, handling, and marketing of cotton and other crops, to the end that agriculture in the South may be permanently profitable. In all this work the American Cotton Association and the farmers of the South may count upon the hearty cooperation of the United States Department of Agriculture."

GUARD FARM WATER SUPPLY AGAINST POSSIBLE POLLUTION

Clear Water May Contain Disease Germs and Poison in Solution.

With the Growth of Population and Development of Industries There Is Progressive Pollution of Streams—Should Remove All Sources of Possible Pollution.

All is not pure water that sparkles. Many persons confuse clear water with clean, and think that because water is clear and sparkling it is necessarily pure. On the contrary, water that appears best to the eye may be vilely polluted. It may be clear and yet contain the invisible and deadly germs of typhoid fever or other intestinal disorders. It may also contain considerable poisonous matter in solution.

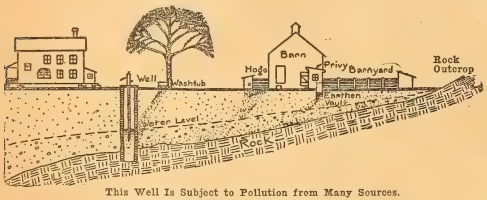
A polluted water supply is evidence of the existence of bad sanitary conditions which it is of the utmost importance to remedy. The most important consideration in connection with the farm water supply is to get clean water. The main sources of water for farm use are streams, springs, cisterns, and wells. The majority of supplies are derived from wells and cisterns, although springs are often used. In rarer instances, where other supplies are difficult to obtain, stream water is used.

Specialists in rural engineering of the United States Department of Agriculture have given considerable study to the problem of getting pure water supplies for the farms of the country. They are prepared to give advice to anyone interested in the subject.

With the growth of population and development of industries there is progressive pollution of streams, so that in the more thickly settled regions streams not already contaminated or subject to pollution are very rare. Water supplies from running streams should, therefore,

never be used for household purposes unless no other supply is available. If surface-water must be used, it should be clear and should be boiled 20 minutes. Other processes of purification, such as filtering, treating with chemicals, or distilling, are also sometimes used, but under farm conditions are attended with uncertainty and expense. Under ordinary conditions surface water of any kind should be looked upon with suspicion.

Deep wells, as a rule, are less likely to be polluted than shallow ones. Polluted surface water, however, often gains access to both deep and shallow wells at the top. Shallow wells are often polluted through the soil. Deep wells may be likewise polluted through the soil or through rock fissures. Sound casing is a protection, but even with this protection surface water may follow the casing to the bottom and thus enter the well.



This Well Is Subject to Pollution from Many Sources.

Remove Pollution Sources.

The logical first step in securing a clean well-water supply is to remove all the sources of possible pollution. Among the worst of these are the open privy vault, the leaching cesspool, and barnyard filth. A well in ordinary pervious soil located lower than and within 100 feet of any of these is almost certain to be polluted. Even though the well is located on higher ground than these sources of pollution, heavy pumping or dry weather may so lower the ground-water level that polluted or contaminated water will be drawn into the well.

The open privy vault and leaching cesspool therefore should be abandoned, and a sewage treatment plant or at least a sanitary privy should be used instead. Sewage, garbage, manure, or other wastes should never be dumped into limestone sink holes or fissured rock, and, above all, into old abandoned wells. An old well used for this purpose is very likely to communicate directly with and pollute the water-bearing stratum from which the other wells in the vicinity draw their supply. Slops or other waste water should never be thrown out of the back door or window upon the ground. If the pigs and chickens must run at large, they should at least be kept away from the well. A box built around the pump and filled with manure in winter is an extremely unsafe and indecent way to prevent the pump from freezing.

Should Safeguard Well Carefully.

Tight, concrete manure pits, impervious floors, and water-tight drains are desirable features for farm buildings. If these are beyond the farmer's purse, the manure pile should at least be placed at a safe distance from the well. The well itself should be located as high as possible with respect to buildings, stock pens, and chicken yards, and as far away from the channels of impure drainage and other sources of pollution as possible.

Additional safeguards to a well-water supply are to give the well an impervious lining of tile, brick, or stone laid in cement, iron, or concrete, and to provide a water-tight platform not only to keep out surface wash, animals, and vermin but to prevent the pump drip and dirt from shoes and buckets from entering the well. Those who use the well should observe the utmost care to keep the platform and the ground about it in a cleanly condition.

MARKET FACTS SAVED PEAR GROWERS $11,000 LAST YEAR

Eleven thousand dollars is the amount that a Colorado banker estimates was saved the Mesa County pear growers last year through the service rendered by field representatives of the Bureau of Markets, United States Department of Agriculture.

Shortly before the harvesting of the pear crop the field agent of the Bureau of Markets was requested by the Mesa County Farm Bureau for a special report on market conditions throughout the United States regarding pears. This included the estimated crop shipped from the earlier pear-producing sections of the West for the 1919 season and for previous years, and the prevailing market prices in these producing centers and at terminal markets.

The report was published in full in both of the Grand Junction daily newspapers, which reach approximately 90 per cent of the pear producers in that section. The pear growers were equipped with information that enabled them to market their crop for $11,000 more than they would have received otherwise.

TESTS AUSTRALIAN VARIETIES OF WHEAT FOR PACIFIC COAST

To determine the varieties of Australian wheat best adapted to conditions on the Pacific coast, the United States Department of Agriculture has conducted a series of experiments which accurately ascertained the yield and quality of those varieties already of commercial importance in that region, as well as other varieties, samples of which were brought direct from Australia. In connection with the latter phase of the investigation more than 130 samples of wheat were obtained, representing 92 distinct varieties.

Results from the early experiments with these wheats show that the "Federation group," consisting of three varieties, Federation, Hard Federation, and White Federation, is probably the best suited to this western region. These three varieties were compared in yield with the leading commercial wheats, including the Bluestem, Australian varieties, Pacific, White Australian, and Early Baart, and produced higher yields, according to the department's cereal specialists. Hard Federation produced the larger yields in Oregon, while White Federation did better in California. Milling experiments indicate that Hard Federation is equal or superior for milling and bread-making purposes to the leading commercial varieties now grown on the Pacific coast and also superior in this regard to Federation and White Federation.

The results of these experiments are reported in Department Bulletin No. 877, "Australian Wheat Varieties in the Pacific Coast Area," copies of which may be had by addressing the department at Washington, D. C.

Farmers usually sell more than one-seventh of the marketed portion of their corn crop in December, about one-seventh in January, and one-tenth each in November and February, or about one-half in the four months. Only about one-fifth of the crop is sold. Corn is marketed more generally throughout the year than wheat is, since fully two-thirds of the latter crop goes out of farmers' hands before winter.

Farmers Should Know Grades of Hides—Can Market Them to Better Advantage

There is no magic formula for simplifying distribution. Improvement in methods can only come from careful study of the routes followed by each kind or class of commodity in its "long, long trail" from producer to consumer.

This fact is recognized by every student of present economic processes and likewise has been taken into account in the studies of marketing problems carried on by the Bureau of Markets, United States Department of Agriculture. One of these specific problems which the department's specialists have studied and regarding which they offer definite recommendations that involve a real saving to consumer and producer, has to do with the marketing of hides, a by-product from which almost every farmer can derive profit if he will give it proper attention.

Knowledge of Grades Needed.

The first need in the present situation is a familiarity on the part of the producer of country hides with the recognized grades and classes of hides and skins. Such an understanding will enable him to prepare and dispose of his products much more intelligently and profitably. But even if he should produce the best quality of hides and skins, the small producer is at a disadvantage compared with large producers like the packers, for example, because the latter handle large quantities of hides and can sort and grade them according to the demands of various tanners. The extremely scattered sources and the comparatively small individual production of country hides and skins makes it impossible for country producers to sort and classify their product in marketable lots.

Nevertheless, many features of the present methods of marketing country hides can be improved since these methods support expensive nonessential profit-absorbing and speculating intermediaries which operate, possibly unintentionally but inevitably, to suppress this branch of the industry and to discourage the quality of workmanship displayed.

Good and Bad Distribution Systems.

Three principal methods of marketing domestic hides and skins prevail at present, as shown by studies made by the Bureau of Markets. The one in which the farmer, ranchman, and local butcher usually participates is needlessly complex and costly. The hides which any one of these individuals has to sell are usually disposed of either to a junk dealer or a local buyer. These men, in turn, sell to a traveling buyer. The latter passes on his goods to the large hide dealer, and this dealer sells to a broker or a tanner's buyer, from whom the collected skins are finally disposed of to a tannery. Thus there is maintained a long, circuitous distribution system that adds needlessly to the final cost.

Contrast this system with the direct methods which the packers are able to employ. Each packer having a large assortment of hides is able to grade and classify his output so that he can dispose of it advantageously to a hide broker or a tanner's buyer direct. From these men the hides go direct to the tanner. Thus various intermediate agencies and their profits are eliminated.

So simple a distribution system is, of course, impossible for the small producer. However, experience has shown that the farmer and ranchman and the local butcher can dispense with the junk dealer and the traveling buyer, and in some cases, with the local dealers as intermediaries in the distribution system. When the producers negotiate directly with the large hide dealer, the latter sorts and classifies the hides sent in and is in a position to share with the producer a part of the saving which this simpler method makes possible. At the same times a lowering of prices for the final product will be the tendency, since distribution cost will be less. The use of a local dealer as intermediary between the producer and the large hide dealer in some cases is advisable, since he is in a position to do needed sorting and classifying.

Either of these simpler methods suggested for the producer of country hides—selling direct to the large dealer or through a local dealer—approaches more nearly the packer's method and represents a decided improvement over methods now prevailing.

Obstacles to Overcome.

Such consignment marketing, however, presupposes mutual confidence and fair dealing by both producer and dealer and, unfortunately, this does not always exist. Another obstacle to the establishment of this method is the producer's preference for ready cash. Many producers prefer to accept any price obtainable from local buyers, such as general stores, produce dealers, junk collectors, and traveling hide buyers rather than consign their products to distant car-lot dealers in central markets. The place that traveling buyers or agents occupy in an improved system of distribution is a matter on which one can be less specific, since opinions of the trade differ as to the practicability of traveling hide buyers or agents of large hide dealers.

Already country producers of hides are coming to see the saving that results from the simpler system briefly indicated here and are making contracts with large dealers in whom they have confidence and who in turn see that it is the part of good business to respect and foster this confidence. Farmers and others interested in putting this important side line on a more profitable basis are invited to communicate with the Bureau of Markets, United States Department of Agriculture, which will supply them with full information regarding the best methods of marketing hides, as well as instructions for proper skinning and curing.

MORE FOOD VALUE FROM CORN AS SILAGE THAN OTHER CROPS

Almost any green crop can be made into silage successfully. Much care, however, must be taken to expel the air from such hollow-stemmed plants as the small cereal grains by cutting fine and packing firmly. Other crops, of which legumes are examples, are deficit in the fermentable constituents needed for palatable silage. On the other hand, a few crops, such as the saccharine sorghums, have so much sugar that unless cut at a more mature stage they have a tendency to produce sour silage.

In most parts of the United States more food material can be obtained from an acre of corn as silage than from an acre of any other crop that can be grown. Corn is more easily harvested and put into the silo than crops like rye, clover, cowpeas, or alfalfa, and when cut for silage the maximum quantity of nutrients is preserved. Experiments have shown that corn, when siloed, lost 15.6 per cent of the dry matter, against 23.8 per cent when cut for fodder and cured in the field. Moreover, there is less waste in feeding silage than in feeding fodder, since good silage properly fed is all consumed. When corn is cut for silage the land is cleared and left ready for another crop sooner than when the corn is shocked or is husked from the standing stalk. Corn can be put into the silo at a cost not above that of shocking, husking, grinding, and shredding.

Farmers' Bulletin 578 on The Making and Feeding of Silage may be had by addressing the United States Department of Agriculture, Washington, D. C.

Weekly News Letter

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Edwy B. Reid, Chief

OFFICE OF INFORMATION
Haslan Smith, Assistant in Charge

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The News Letter is a news service, and editors are invited to reprint from it with or without credit.

PAY TRIBUTE TO THE MEMORY OF FORMER SECRETARY WILSON

Sympathy at the death of former Secretary of Agriculture James Wilson was sent to the family of the deceased former Cabinet officer in the form of a resolution adopted at a meeting of the chiefs of the various bureaus of the United States Department of Agriculture. Tribute was paid to the former head of the department for "his patriotic devotion to the interests of all the people, his broad vision, and his practical wisdom." As a token of respect the flags on all department buildings were placed at halfstaff, and remained so until after the funeral, which took place at Traer, Iowa.

Because of the time of the funeral, the department was unable to send representatives from Washington. The department, however, designated Dr. Henry C. Taylor, Chief of the Office of Farm Management, who was in the Middle West; Frank S. Pinney, Federal agricultural statistician at Des Moines; and R. E. Doolittle, Chief of the Central Food and Drug Inspection District at Chicago, to represent it at the funeral.

A floral tribute was sent by officials and employees of the department as a token of esteem for their former chief. The message of sympathy sent the family of Mr. Wilson followed a similar personal message sent by Secretary of Agriculture Meredith. The resolution of the bureau chiefs, forwarded by Assistant Secretary of Agriculture Ball, read:

"The members of the Department of Agriculture, feeling deeply the loss of their former Secretary, James Wilson, of Iowa, desire to express their sympathy with his family and their appreciation of his great services to the United States as Dean of Agriculture, Member of Congress, and Secretary of Agriculture. His patriotic devotion to the interests of all the people, his broad vision, and his practical wisdom place him high among those who have deserved well of their country. Beloved as a friend, admired and respected as an official, his example as a man and a statesman is one to which all Americans may turn for inspiration and emulation: Therefore be it

"*Resolved*, That in the death of James Wilson American agriculture has lost one of its greatest exponents and American citizenship one of its finest exemplars.

"In token of respect the flags on all department buildings will be placed at half-mast, and a copy of this resolution will be sent to the family."

In forwarding the resolution, Assistant Secretary Ball said:

"I am sending the resolution adopted by the bureau chiefs to-day. We are sending flowers and will have two officials of the department attend the funeral. Mrs. Ball joins me in expressing sympathy."

The personal message sent by Secretary Meredith to Miss Flora Wilson, daughter of the former Cabinet officer, read:

"Mrs. Meredith and I extend to you and to the other members of the family our heartfelt sympathy in your bereavement. I know that I express the sentiment of all the members of the Department of Agriculture and of the country as a whole when I say that in the death of your father the Nation has lost one of its foremost citizens and agriculture a great friend and benefactor."

SELLING PIGS AND BUYING PORK NO PROFIT FOR FARMER

There's a profit in selling pigs and buying pork—but not for the farmer who follows this practice. The farmer's most profitable course is to kill, cure, and can enough pork for his own use and sell any additional amounts which he can produce and for which there is a demand. The practice of home curing pork has suffered through neglect, but it is now being revived, according to the Bureau of Animal Industry and the States Relations Service. These two bureaus of the United States Department of Agriculture are cooperating to encourage the general adoption of this wholesome usage among farmers. Home-cured pork, scrapple, pork pudding, sausage, canned pork, headcheese, and lard are among the foods which the farmer should get from his own cellar shelves and not from the city market. All transportation costs and commissions remain in his pockets.

A bulletin, "Killing Hogs and Curing Pork," now being revised by the Department of Agriculture, will soon be ready for issue. New methods and improvements have been given space in this discussion, and details of the processes for canning fresh pork have been added. Canning preserves pork with fresh pork flavors and lessens the toil and time incident to some of the older ways of curing the product. Besides being rapid and simple, the new process saves pounds of pork for all periods of the year which formerly had to be eaten soon after slaughter or be wasted.

FOOD INSPECTION SERVICE PREVENTS MARKETING WASTE

More than 25,000 inspections of fruits and vegetables moving in interstate commerce were made by representatives of the Bureau of Markets, United States Department of Agriculture, during the 12 months ended June 30, 1920. This is an increase of 78 per cent over the number of inspections for the preceding year.

By the use of the food products inspection service shippers, receivers, and others interested can obtain sworn statements attesting the condition of perishable products received at central markets. With immediate evidence of the condition of the food sales are made promptly, thereby facilitating the distribution of the products handled. This prevents deterioration and waste on account of delays resulting from disputes as to the condition of products, hastens the release of cars, and prevents unfair trade practices.

The bureau has some 40 representatives located at 26 important market centers to make inspections upon request of those concerned with the shipments. A charge of $2.50 is made for less than half a carload and $4 for each half a carload or more.

SHEEP MAKE WASTE PASTURE INTO MEAT

The keeping of a reasonable number of sheep on the average farm does not necessitate the keeping of fewer dairy cows or other grazing stock. This fact was determined by the United States Department of Agriculture in its recent investigation of sheep-raising possibilities in New England. It was found that farms where sheep are kept successfully have practically the same number and kinds of other live stock as other farms of like area where no sheep are kept, and that the acreage in crops on the two classes of farms is substantially the same. The inference is that the farmer who keeps no sheep is simply throwing away enough pasturage that cows and other live stock do not utilize to net him a profit.

Should Profit by Experience of Others, Secretary Tells Visiting Texas Farm Boys

One hundred and twenty-five farm boys from Texas—each a prize winner in club work in his home county—called on Secretary Meredith August 17, and heard him speak in enthusiastic terms of the club work they had done in Texas and of club work in general. The visit of the boys to the National Capital and the welcome given them at the United States Department of Agriculture were features of a 5,000 mile tour which these lads enjoyed after completing a short course in agriculture at their State college of agriculture. Their itinerary included principal cities in the Middle West, East, and South, as well as points in Canada. While in Des Moines they were entertained at dinner on the farm of Secretary Meredith. T. O. Walton, director of extension in Texas, presented the boys to the Secretary in Washington. Following a talk by Mr. Meredith, Clarence Ousley of Texas, formerly Assistant Secretary of Agriculture, spoke.

"We appreciate your courtesy in coming here," said the Secretary in the course of his talk, "and I wish to say to you, sincerely and earnestly, that those interested in the work you are doing are interested because they believe the future of agriculture, the permanency of agriculture, rests, in considerable measure, with you boys from Texas, and others like you all over the country. Personally, I was greatly interested in the boys' and girls' work before I came to Washington, and I sincerely feel that there is no work which is more far reaching in its influence.

Reliable Information Necessary.

"There is one serious thought I wish to leave with you this morning: Nothing you can do is more important, more necessary, to success than securing reliable information. In addressing some boys a short time ago I suggested that they should get, if possible, a 'thousand years' experience'; that is, they should take advantage of the experience of others. In the Department of Agriculture, for example, there are men who have devoted their whole lives, all their efforts, to finding solutions to certain problems. It may have taken them 3, 5, 10, or even 20 years, and yet they can perhaps tell you boys the result, the fact they have proved, the problem they have solved, in 5 minutes. In reading a bulletin prepared by one of these men, therefore, you are getting the results of their experience and efforts; and if you take advantage of the experience of a number of such men you will soon find that you have secured, in effect, a 'thousand years' experience.' In this way you can learn the practices of others who have gone before you and who have discovered things by actual experience.

"We have all been told we must learn by experience. Certainly, we must profit by our own experience, but we may also profit, and should profit, by the experiences of others, securing the experience of this man in research work, of another man as to certain methods of feeding, and of another as to rotation of crops, etc. When you do that you are taking advantage of the experience of many men. It is the boy who knows how to utilize the experience of others who is best equipped to conduct his own work. The one thing, therefore, that I wish to leave with you is the suggestion that you read your bulletins, study the lessons, and profit by the experience of others."

HUGE FUNDS NOW AVAILABLE TO AID STATES BUILD ROADS

(*Continued from page 1.*)

is to be used before July 1, 1922. Any money which is not taken up before that time will be reapportioned among all the States in the same manner in which the original apportionments are made. All previous apportionments have been taken up in the time allotted, and it is not likely that the States will fail to absorb this last apportionment. To do so, however, will mean that the States must survey, plan, and let contracts for at least $200,000,000 worth of Federal aid road construction in the next two years.

"If the States continue to pay more than 50 per cent of the cost, as they have in the past, the cost of the roads constructed with this last apportionment may reach $250,000,000. In other words, it will be necessary to plan for construction at the rate of at least $100,000,000 and probably more per year. Some appreciation of what that means may be gleaned from the fact that in 1915 the expenditure for all roads in the United States, constructed under State supervision, was only $80,000,000.

Have Been Expanded.

"Since 1915, however, State highway departments have been greatly expanded, and efficient machinery has been developed which will undoubtedly be able to handle the greater volume of work.

"The States have had four years in which to prepare for the expenditure of the large funds which now become available. They expect to be able to handle them. What is of greater concern to them at this time is the condition which may result if Federal appropriations are permitted to lapse. The highway departments should know at least a year in advance what funds are to be available in order that plans may be made for future construction. Unless, therefore, further Federal action is taken in the coming year, the States will be left in doubt as to the future policy of the Government, and the amount of money they must be prepared to expend. Such a contingency would involve a serious setback to the progress of road construction, and should be avoided by early congressional action."

The following table shows the last apportionment by States:

Federal-aid funds for road building, which became available to the States July 1, 1920.

State.	Apportionment of last installment of 1916 Federal appropriation.	Apportionment of last installment of 1919 Federal appropriation.
Alabama	$526,220.88	$1,578,662.63
Arizona	343,411.04	1,030,233.12
Arkansas	421,294.52	1,263,883.57
California	763,668.88	2,291,005.63
Colorado	438,939.79	1,316,819.38
Connecticut	153,337.36	460,012.07
Delaware	40,668.70	122,006.11
Florida	286,891.98	860,585.94
Georgia	674,287.74	2,022,863.22
Idaho	306,512.48	919,537.45
Illinois	1,091,266.98	3,273,800.93
Indiana	671,763.32	2,015,289.95
Iowa	720,332.18	2,160,996.56
Kansas	717,841.16	2,153,523.46
Kentucky	487,938.85	1,465,816.57
Louisiana	340,557.78	1,021,673.35
Maine	240,057.54	720,172.62
Maryland	216,749.65	650,248.96
Massachusetts	368,197.21	1,104,591.62
Michigan	722,915.99	2,168,759.98
Minnesota	710,522.33	2,131,567.00
Mississippi	451,889.29	1,355,667.88
Missouri	846,974.90	2,540,924.70
Montana	501,747.53	1,505,242.60
Nebraska	533,435.50	1,600,306.43
Nevada	319,036.11	957,239.32
New Hampshire	103,709.73	311,129.20
New Jersey	298,889.11	896,667.34
New Mexico	399,616.96	1,198,850.89
New York	1,243,973.28	3,728,919.83
North Carolina	569,763.45	1,709,290.35
North Dakota	384,056.95	1,152,170.85
Ohio	926,561.70	2,779,685.11
Oklahoma	575,619.53	1,726,858.55
Oregon	394,038.01	1,182,114.02
Pennsylvania	1,147,985.51	3,443,959.54
Rhode Island	58,314.22	174,942.65
South Carolina	359,004.76	1,077,014.28
South Dakota	403,944.86	1,211,834.58
Tennessee	505,478.48	1,696,435.42
Texas	1,465,399.62	4,396,198.84
Utah	282,393.91	847,181.75
Vermont	112,519.27	337,557.82
Virginia	494,418.46	1,483,255.37
Washington	361,156.95	1,083,470.84
West Virginia	265,038.13	795,114.38
Wisconsin	636,236.34	1,908,709.01
Wyoming	308,428.96	925,286.88
Total	24,250,000.00	72,750,000.00

Very extraordinary was the change of the farmers' price of wool from a place above the farmers' price of cotton in the June record of the Bureau of Crop Estimates to a place below that of cotton in July. Practically there was little movement of wool from producers' hands, but nominally at least wool became cheaper than cotton.

Kanred Wheat Epoch-Making for Kansas—Well Adapted for Varying Conditions

The introduction of hard winter wheat from Russia into Kansas and other States of the central Great Plains area in the early seventies, was an epoch-making event. The growing of these Crimean wheats, especially the Turkey and Kharkov varieties, has been the principal cause of the prosperous development of much of that section. The development and distribution of Kanred, an improved strain of hard red winter wheat, may prove equally epoch-making in the history of Kansas.

Kanred is one of the most important examples of the improvement of wheat by the method of pure-line selection. It is the product of a single head, selected in 1906 at the Kansas Agricultural Experiment Station. Its true value was determined only after many years of careful experiments, but as a reward not fewer than 500,000 acres were sown in the State of Kansas alone in the fall of 1919.

Since 1917, Kanred has been under experiment in many States other than Kansas. Last fall many thousands of bushels were introduced into other States for commercial growing. In the indiscriminate distribution of new varieties of wheat there is always danger of disappointment and financial loss by finding the wheat not adapted to new conditions. The United States Department of Agriculture, therefore, summarizes briefly experimental results with Kanred wheat, indicating the sections where Kanred wheat should and should not be grown.

Well Adapted to Kansas.

Kanred is unusually well adapted to many of the varying conditions in the State of Kansas. Its principal advantage over Turkey and Kharkov is its resistance to some forms of both stem rust and leaf rust. It has other advantages, however, such as slightly greater winter hardiness, earlier maturity, and makes better pasture. Those factors have caused it to outyield the Turkey and Kharkov wheats in most sections of Kansas by 3 to 5 bushels per acre. The same factors may or may not be as important in other States.

Briefly, Kanred wheat can be grown with success wherever other hard winter wheats are grown. It can not compete with soft winter wheat varieties in the eastern United States and is not hardy enough to replace spring wheat in the northern Great Plains. It should be expected, therefore, only to replace the Turkey and Kharkov varieties.

In the eastern parts of Nebraska and South Dakota, southern Iowa, northern Missouri, and central Illinois, Kanred should outyield Turkey or Kharkov wheat because of its rust resistance. In 1919, a year of severe rust infection, experimental results were significantly in its favor in these sections. In a less degree the same can be said of western Oklahoma and the Panhandle of Texas.

Should Yield Better.

In eastern Colorado and eastern Wyoming, southwestern Nebraska, and the intermountain districts of Montana, Kanred should yield somewhat better than Turkey. In these districts rust usually is not a serious factor. Experimental results at several points in this general section have indicated, however, that the slightly greater winter hardiness and earlier maturity of Kanred, in comparison with Turkey, are sufficient to make its yields in many cases significantly larger than those obtained from Turkey. The advantage of Kanred in this section, however, is considerably less than in the eastern section of the hard winter wheat belt, where rust is an important factor.

In the Pacific Northwest considerable hard winter wheat is grown. Experiments in the Columbia Basin of Oregon and in the Big Bend and Palouse sections of Washington do not indicate that Kanred is superior to the local strains of Turkey and Kharkov. In that section its rust resistance and winter hardiness are of little or no advantage, and its introduction there does not seem justified.

Some concern is felt in commercial circles regarding the milling quality of Kanred wheat in comparison with the old standard varieties. The Kansas Experiment Station has pointed out that under Kansas conditions the milling and bread-making value of Kanred is equal or superior to both Turkey and Kharkov.

The accompanying table shows the department's results of milling, baking, and chemical tests of Hard Red Winter wheats grown outside of Kansas during the years 1917–18–19. These samples were not all grown under similar conditions, but are pure samples obtained from experiment stations in the Hard Winter wheat sections, including the States of Montana, North Dakota, South Dakota, Wyoming, Colorado, Nebraska, and Texas. The samples of Turkey and Kharkov, as well as the commercial samples of Hard Red Winter wheat, in most cases were grown under more favorable conditions than those of Kanred, as indicated by its lower average weight per bushel. This low weight may partly account for its much higher crude protein content. In yield of straight flour Kanred exceeds the average yield of Kharkov, but is slightly less than that of Turkey. Its average water absorption and color of bread is slightly less, while its average loaf volume is slightly greater than either Turkey or Kharkov. In all respects, the results from Kanred compare favorably with those from these other varieties and commercial samples of Hard Red Winter wheat tested. These data indicate that the quality of Hard Red Winter wheat would be maintained with a widespread distribution of Kanred wheat throughout the Hard Winter wheat section.

The average milling, baking, and chemical qualities of the three principal hard red winter wheat varieties and a comparison of their respective qualities with those of commercial samples of the same class of wheat are shown as follows:

Tests made on samples representing the crop years 1917, 1918, and 1919.

	Commercial samples *a* of Hard Red Winter wheat.	Experiment station pure variety samples.*a*		
		Kanred.	Kharkov.	Turkey.
Number of samples	80	12	36	48
Weight per bushel—pounds	59.5	57.2	58.5	58.9
Yield of straight flour—per cent	72.7	73.2	72.1	74.3
Water absorption of flour per cent	61.0	61.3	62.0	62.1
Volume of loaf—c. c. (340 grams of flour used)	2,030	2,044	2,013	2,040
Color of bread—score	90.7	89.5	91.3	89.8
Texture of bread—score	90.7	89.6	90.0	89.1
Crude protein content—per cent (N x 5.7 basis 13.5 moisture content)	12.1	15.4	14.4	13.8

a These samples were grown in territory outside of Kansas.

MARKETING SHEEP AND HOGS.

Of 54 carloads of sheep, including 11 single-deck and 43 double-deck cars, the cost of loading and bedding cars averaged $0.019 per 100 pounds live weight, according to figures furnished the Federal Trade Commission by the United States Department of Agriculture. Other marketing expenses, including freight, varied from $0.239 to $1.97 per hundredweight. The shrinkage in weight varied from 3.53 to 8.57 per cent, the majority of the shipments averaging approximately 8 per cent.

Similar records on 253 carloads of hogs showed the cost of loading and bedding to average 1.5 cents per 100 pounds live weight; feed at market approximately 8 to 9 cents; commission charges, 4 to 10 cents; miscellaneous expense, 2 to 10 cents, averaging approximately 5 cents; and the total cost of marketing including freight from varying districts approximately from 33 to 50 cents. The shrinkage in weight on 873 carloads of hogs varied from 9.88 to minus 4.59 per cent.

Even the Most Critical Find No Fault With Dried Corn; Better Than Canned

A vegetable which, when dried, is above criticism even by the most critical, is corn. Other kinds of garden products may or may not be liked by many people, but dried corn is the equal if not the superior of canned corn and can be used for practically as wide a variety of purposes. The following directions for drying it are those advised by the United States Department of Agriculture.

Any of the varieties of sweet corn having qualities desirable for table use will make a good dried product. Corn intended for drying should be gathered when in the milk stage, before glazing and hardening have begun and when the corn is in an ideal condition for immediate table use. It should be gathered only as it can be prepared for drying, as corn deteriorates rapidly.

Careful Preparation Essential.

Husk the ears and trim with a knife to remove any injuries. The silk need not be removed, as it can be readily separated from the corn after drying. Place the ears in wire baskets or wire-bottom boxes and plunge into boiling water for 8 to 12 minutes, or until the milk is set. A little salt may be added to the water if desired. Divide the corn into older and younger lots before blanching, as the younger ears require somewhat longer cooking than the older ones.

After cooking, remove corn from the water, allow it to drain and cool sufficiently to be handled and cut from the cobs with a strong, sharp knife, taking care that none of the cob is removed with the kernels. The glumes or the hull attachments at the tip of the grains are easily screened out after the corn becomes dry. Spread the kernels upon trays to a depth of 1 inch if drying is done in a drier, or one-eighth to five-eighths inch if the corn is to be dried in the sun. Stir the grains thoroughly several times during the drying to break up any compact masses.

Sun Factor in Drying Corn.

It is practically impossible to bring corn to a sufficient degree of dryness by the unaided heat of the sun. If corn is dried in the sun it should be finished by pouring into bread pans, placing in the oven of the stove, and warming to 160° to 165° F. for two hours. Whether the drying is done in the sun, in a cook-stove drier, or in a commercial drier, it should be continued until the grains are hard, semi-transparent, and will break with clean, glass-like fractures if crushed.

Before storing free the corn of silks, glumes, and bits of cob. This may be done by pouring the corn from one vessel to another in a strong draft. When the corn is dry, store in closely woven muslin bags or heavy paper bags. Tie tightly at the neck and place within a larger bag, which also should be tightly tied.

Do not allow the drying process to stop from the time it is started until the corn is fairly dry. Corn is a product which contains considerable sugar and protein, and if the drying process is allowed to stop bacteria are apt to develop and souring take place. Protect it from insects. If sun drying is interrupted by cloudy weather or showers, remove corn to the stove and continue drying or the product may spoil.

EXPERIMENT CROPS BRING PROFIT.

Costly experiments must be carried out upon an experiment station farm to find how the average farmer can make or save money, but in spite of these high overhead expenses the Arkansas State College farm sold produce worth $15,000 last year. The department of horticulture representative received $1,250 for the crop of yellow transparent apples, the animal husbandry branch sold 22 pigs for $538.20, and the potato crop brought the farm $1,520.80. Other products raised the farm receipts to the total given above.

The idea of profit is not uppermost in agricultural experiment work, but these sales figures show that scientific, well-planned farm management can overcome the handicap imposed by unusual expenses.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended August 28, 1920:

Growing Irrigated Grain in Southern Idaho. Farmers' Bulletin 1103.

Peanut Growing for Profit. Farmers' Bulletin 1127.

Experiments with Kherson and Sixty-Day Oats. Department Bulletin 823.

Capillary Movement of Soil Moisture. Department Bulletin 835.

Roundheaded Apple-Tree Borer. Department Bulletin 847.

Classification of Ledger Accounts for Creameries. Department Bulletin 865.

Pickering Sprays. Department Bulletin 866.

Farm Land Values in Iowa. Department Bulletin 874.

Effect of Alfalfa on Yields of Field Crops. Department Bulletin 881.

Spur Feterita. Department Circular 124.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 1103; Department Bulletin 835; Department Circular 124.

FARM WOMEN GO 75 MILES TO LEARN CHEESE MAKING

Last spring two women living in South Ferry, Idaho, heard of a cheese demonstration to be given by a dairy specialist connected with the State agricultural college in a town 75 miles away. They made the trip—a two-day one—by stage to the meeting and learned the ins and outs of cheese making. Then they returned to South Ferry and taught the women in their neighborhood what they had learned regarding cheese making. A survey made this summer—three months after the demonstration—showed that 1,600 pounds of cheese had been made in that neighborhood under the tutelage of the two women.

In Niobrara County, Wyo., the Farm Bureau members are standardizing their butter and selling it in special cartons, labeled "Niobrara County Farm Bureau Butter." They are hoping to do the same with cheese. One woman in Niobrara County paid all the expenses of her household last year by making and selling cheese. She did the same this year and in addition is buying all the gasoline for the tractor.

In 1920, 394,718 pounds of different kinds of cheese were made in farm homes in the North and West as a result of the efforts of the home demonstration agents.

Those who are wondering why this country keeps on producing hops, should know that they have been in great and active demand on the eastern side of the Atlantic since the termination of the war made this possible. The exports of domestic hops from this country during the year, beginning with July, 1919, amounted to nearly 31,000,000 pounds, while the estimated production of that year was only 29,346,000 pounds.

Growing Child Needs Well-Balanced Diet—Should Have Appetizing School Lunches

How much time and thought do you put on your children's lunch basket?

"Children have such appetites that they will eat anything" is a remark often heard. They may have good appetites now, but if school children are allowed to eat the wrong things, the time may come when they can't eat the right things.

Growing children have certain special needs in the way of food. Like grown people, they must be supplied with that which is necessary for health and strength, but, unlike them, they should be given also that which is necessary for development.

Even one hot dish obtainable at school at noon makes the lunch more appetizing, and many schools are now providing it. When a child must carry lunch and can not obtain at school a hot dish, the task of filling the box or basket demands great care to make sure that it is appetizing, nourishing, and sustaining.

One of the best investments to make for a child who carries his lunch to a school that does not serve a hot lunch is a bottle which will keep liquids hot or cold for some time. Cocoa or soup piping hot on a cold day will make a feast out of an otherwise uninteresting lunch.

Five Groups of Food Needed.

In general, the school lunch, like the child's diet as a whole, should contain representatives of the five food groups. In it should be found foods rich in protein, such as milk, cheese, meats, fish, dried beans, peas, peanuts, and other nuts; cereal or starchy foods, such as bread, cereal mushes, rice, and tapioca; fatty foods, such as butter, cream, salad oils, and bacon; vegetables and fruits, but such as cereals and dried beans are not put under this classification; simple sweets, including cakes and cookies that contain little fat; cane sugar, plain candies, maple sugar, sweet chocolate, jellies, preserved fruit, jams, marmalades, honey, molasses, sirups, and dried figs, dates, and other dried fruits.

Some Suggested Basket Lunches.

Here are some recommended combinations:

Sandwiches with sliced, tender meat for filling; baked apple, cookies, or a few lumps of sugar.

Slices of meat loaf or bean loaf; bread and butter sandwiches; stewed fruit; small frosted cake.

Crisp rolls, hollowed out and filled with chopped meat or fish, moistened and seasoned, or mixed with salad dressing; orange, apple, a mixture of sliced fruits or berries; cake.

Lettuce or celery sandwiches; cup custard; jelly sandwiches.

Cottage cheese and chopped green-pepper sandwiches, or a pot of cream cheese with bread-and-butter sandwiches; peanut sandwiches; fruit; cake.

Hard-boiled eggs; crisp baking-powder biscuits; celery or radishes; brown-sugar or maple-sugar sandwiches.

Bottle of milk; thin corn bread and butter; dates; apple.

Raisin or nut bread with butter; cheese; orange; maple sugar.

Baked bean and lettuce sandwiches; apple sauce; sweet chocolate.

Nearly everyone knows the necessity of dainty wrapping and packing if an appetizing lunch is to be the result. A container that can be scalded, plenty of paraffin paper, a jelly cup with a cover, and bottles with screw tops all assist in the making of a dainty lunch.

CLUB WORK IN GUAM MEETS BIG SUCCESS FIRST YEAR

Boys and girls of Guam are taking hold of club work with a vim that exceeds all expectations, specialists of the United States Department of Agriculture say in summing up the accomplishments of the youthful farmers for the first year of their organization. Reports for 1920 are much better than those for 1919 when club work in Guam was begun. In March, 1920, the clubs showed a membership of 545 out of a total population of 15,000 and a school enumeration of 2,200. The total value of the products raised during the past season was $3,513.63, or $8 for each of the members fulfilling all the conditions of membership.

The members engage in corn, bean, taro, copra, pig, and poultry raising. Each member is required to submit to the extension agent of the station a report on a special form and in addition must present a story of his season's work. For the season ending March 15, 1920, 439 members, or 80.1 per cent of the total enrollment submitted reports and accounts of their work.

In order to arouse the interest of the people of Guam, an agricultural and industrial fair is held each year in Agana, the principal town of the island. At the last fair, which was held February 14–16, 1920, an opportunity was given for the first time to show the work of the boys' and girls' clubs to the people of Guam. The exhibits made by the club members were a revelation as to the possibilities of agriculture in Guam and they called forth much favorable comment. Club members made 375 exhibits out of 557 in agriculture and in addition 211 of the children submitted with their exhibits reports and stories of their work. Prizes consisting of scholarships, live stock, implements, and cash were awarded and keen rivalry was shown in the various competitions.

In addition to the club work, the extension agent has organized school garden work in the different districts of the island, and also demonstration work among the adult farmers. The latter phase of the work is already showing valuable results.

CANNING SPECIALISTS TEACH FRENCH AMERICAN METHODS

Thousands of women and children in France are learning to can in the American way this year. All classes, from the peasant in the cottage to the lady in the chateau, are being reached by the four American canning specialists who are giving the canning demonstrations. This is the second year the United States Department of Agriculture has lent canning specialists to the French Government for the purpose of teaching the French people the American art of home canning and drying. The same group has been sent both years.

The first demonstration this year was given early in June at a chateau near Versailles. At this demonstration an exhibit was also held of the products which were put up during the past year by French housewives under the instruction of the French teachers who attended the school conducted by the Americans in 1919. Several commercial canners competed with the home canners for the prizes, but the housewives carried off the bronze medal—the first prize.

At Morsain large numbers of farm girls attended the demonstration given there and carefully watched each step in the canning of cherries, peas, and beans, in the drying of peas and beans, and in the extraction of pectin to use in jelly making.

All during June, July, and August the little group of Americans moved from place to place in France, teaching those who were anxious to learn the American methods. The work was carried by them into practically every section of France.

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MAY FIND PRACTICAL USES FOR GAS MADE FROM STRAW

Conduct Series of Tests with Experimental Apparatus at Arlington, Va.

Thus Far New Combustible Has Been Used to Operate an Automobile and for Illumination and Cooking—Possibilities of Gas Not Yet Fully Determined.

A gas obtained by the destructive distillation of wheat, oat, and rye straws is now being produced upon a small scale at the experimental farm of the United States Department of Agriculture at Arlington, Va. Although an automobile has been operated with the new combustible, and it has been used for illuminating purposes as well as for cooking, the possibilities of straw gas are not yet fully determined, the department says. In order to determine the exact commercial value of the gas, David J. Price, engineer in charge of the new Office of Development Work, a subdivision of the Bureau of Chemistry designed to help commercial and industrial concerns to use new processes and discoveries developed in the bureau, has placed H. E. Roethe, jr., in charge of a series of production tests with the experimental apparatus at Arlington.

Lack of Money Retards Work.

The work can be carried on but slowly owing to the limited funds available at present, but it is planned to do much that will determine the quantity and nature of the gas that may be obtained from wheat, oat, barley, rye, and rice straws, and from cornstalks, corncobs, and other vegetable matter usually burned as waste. If the results of these tests warrant further investigation the experiments will be extended to the problem of plant equipment for producing the gas on a scale sufficient to allow the farmer to supply light and heat for his house, power for stationary engines, and, possibly, for his tractor from a small individual outfit. If a suitable unit can be constructed so that the farmer's initial cost will be small, it seems likely that the straw gas may have a certain economic value in the sections of the country where the raw material from which the gas is made is now considered as waste and burned or left to rot on the fields. In some sections of the country the straw is used as fertilizer, but in the West and Northwest there is an unlimited supply of the material available for conversion into light and fuel for the farm home.

While it has been possible to operate an automobile with straw gas, and it is known that 50 pounds of straw will produce about 300 cubic feet of gas—an amount sufficient to drive a light roadster 15 miles—the problem of reducing the gas to liquid form or condensing it sufficiently to allow it to be carried conveniently is an essential one that must be solved before straw gas can be considered as a possible motor fuel. This will be another of the tasks taken up by the engineers in the Development Division.

Not a New Thing.

Straw gas is not a new thing. The present process was developed by George Harrison, a Canadian engineer at Moosejaw, in 1914, who later cooperated on the project with Prof. MacLaurin, of the University of Saskatchewan, Saskatoon, Canada. The university, in conjunction with the United States Department of Agriculture, exhibited a straw-gas equipment at the Exposition of Chemical In-

(Continued on page 8.)

NOTHING TO DO BUT THIS—

Based on figures taken from the reports of the agricultural extension work, the States Relations Service, United States Department of Agriculture, calculates that the average week's work done by a county agent in the 33 Northern and Western States is about as follows:

24 office calls by farmers.
9 farm visits.
150 miles traveled by auto.
2 addresses at public meetings.
3 agricultural articles prepared for rural papers.
30 individual letters to farmers.
120 circular letters mailed.

ASSISTANT SECRETARY LAUDS WORK OF WEST VIRGINIA BOYS

Young Farm Lads Visit the Department as Feature of Sight-Seeing Trip.

Tells Boys They Have Shown Their Worth and Have Put Their Feet "On the Ladder of Success"—Scientists of Department Strive to Better Agriculture.

Fresh from a tristate camp at Grottoes, Va., 47 West Virginia farm-club boys called at the United States Department of Agriculture in Washington August 30 to pay their respects to the organization and "see the sights." In the absence of Secretary Meredith, Assistant Secretary E. D. Ball welcomed the lads. The boys represent some of the most successful club members in West Virginia. The camp at which they had spent the previous week was attended by about 125 club boys representing Maryland, Virginia, and West Virginia.

"Two Per Cent Better."

"I am very much pleased to meet you here and am sorry that Secretary Meredith is not here to talk to you, because he has taken a wonderful interest in the boys' and girls' clubs," said Dr. Ball. "I am reminded of a story I was reading yesterday entitled 'Two Per Cent.' It was a story of the boy who was going to be just 2 per cent better than the fellows around him. He lived west of the Rocky Mountains and his ambition was to own a ranch. He succeeded because he worked 2 per cent harder and was 2 per cent more aggressive than his companions, and that is your story, as I understand it. You have been 2 per cent better than the rest of the boys. That means a great deal. You have put your foot on the ladder of success. Because you have come here your name will not go down in history, but what brought you here may be the beginning of what will finally make history.

"Every high-school boy who has studied ancient history has learned of Leonidas, who, with his 300 Greeks, held the pass at Thermopylæ. You have been reading in the last few days of how

America has won at the world-famous Olympic games at Antwerp, and you will remember that one of these events was the Marathon. You know that the Marathon was named for the wonderful feat of the Greek messenger in running 26 miles to carry the news of victory to Athens. These things happened twenty-four hundred years ago, and yet their name and fame lives to-day, showing what is possible to the individual who excels. You have made a start, and if you keep in mind the story of 2 per cent you also will achieve.

Had the Same Ideals.

"You are visiting the Department of Agriculture to-day, and you will meet many scientists. Keep in mind that they had the same ideals in their lives that you have shown in yours, that they wanted to do something to help develop better agriculture. They studied from the time that they were boys, and they are still studying. They have not worked for wealth nor for power, but they have sought to solve the problems that have handicapped the development of agriculture. It does not make any difference what you have done, whether you have grown corn, raised pigs or calves. You have been using those things that these great scientists have worked out and given to you and to the Nation.

"We are especially glad to welcome members of the boys' and girls' clubs of America, because they have the same high ideals as the scientific men and are joining with them to develop a better and more attractive agricultural practice, which, if carried out, will make of us the greatest nation of the earth. As representatives of this great organization we bid you welcome."

FARMERS FIND COW TESTING SAVES MANY TIMES ITS COST

Coos County, N. H., has a very successful cow-testing association. A report from that district regarding the dollars-and-cents value of the association says: "Many times the tester's salary is saved each month."

One farmer in the Coos County association reports a yearly saving of $525 in the feed bills alone. Another, with eight cows, claims a net gain of $250 a year from the work of the association, and a local cattle dealer says that the tests add $40 per head to the value of good cows.

A farmer near Lancaster offered to sell one of his cows for $75 before testing her. After the test, however, she was not for sale, because during the 10 months she made $19 more net profit than his 12 lowest-producing cows combined. These and other figures from the Coos County association show that cow testing may be made to pay big returns. Its educational value is also great.

Cow-testing work is growing rapidly, but it still has room for growth. Less than 1 per cent of all the dairy cows in the United States have been tested for production. Progressive dairymen say that there should now be at least many times that many cows on test.

Boll Weevil Yields Place to Weather In Reducing Production of Cotton Lint

Popular opinion to the contrary, the boll weevil must yield place to the weather by a larger margin as a destructive factor in reducing the production of cotton lint. Destruction by the boll weevil is appreciably less than that by deficient moisture alone, according to the Bureau of Crop Estimates of the United States Department of Agriculture. Its conclusions are supported by annual investigations made by the bureau during the last 11 years.

Damage Record.

During this period the normal production of lint was reduced 35.5 per cent by all causes of damage. The boll weevil, one of these, according to the estimate, was responsible for 7.3 per cent, or about one-fifth of the total damage to the cotton crop for the 11 years.

The onset of the weevil in Georgia, Florida, and Alabama in the years 1916–1919 has made a reduction of the crop in all States due to this cause alone 10.4 per cent below a normal crop, while the reduction due to all causes in these years is 41.1 per cent.

Comparing deficient moisture with all insect pests as a cause of cotton-crop damage in pounds of lint that failed to be produced shows that in the 11 years deficient moisture caused a loss of 38.2 pounds of lint per acre on the average and all insect pests 29.3 pounds. In the total damage to these 10 crops of cotton, amounting to 113.4 pounds of lint in the average of the years, all climatic causes account for 71.6 pounds, or almost 2½ times the loss due to all insects. The average of the last five years gives a damage of 40.1 pounds to all insects and 73.3 pounds to all climatic causes, or less than twice as much.

Yearly Loss Enormous.

It is indicated that the boll weevil costs the cotton crop approximately 2,000,000 bales, one year with another, since this pest has invaded Georgia and Florida. If the production of these 2,000,000 bales had been realized yearly instead of prevented during the last four years, their value and the value of their seed to the cotton grower at the farm price of lint and seed on December 1 would have averaged about $300,000,000 per year.

MORE ACCREDITED HERDS REPORTED.

Recent field reports on official tuberculin testing in Wisconsin show large gains in the number of herds in that State accredited as being free from tuberculosis. In the month of May Wisconsin made the largest gain of any State, with an increase of 47 accredited herds. Although all reports have not yet been analyzed, the June records are expected to show Wisconsin, with a further gain of 92 accredited herds, still making the most rapid progress.

Although last year about eighth in rank compared with other States active in eradicating bovine tuberculosis, the Badger State has recently forged to third place. Minnesota is first with 500 accredited herds and Virginia is second with 337. On July 31 Wisconsin had 302 accredited herds. The figures are from records of the Federal Bureau of Animal Industry based on field reports up to July 31, 1920.

GLUEING TURPENTINE BARRELS.

Turpentine will readily penetrate through the staves of an ordinary wooden barrel. It is therefore necessary to coat the inner surface of the barrel with ordinary glue, which is insoluble in turpentine but readily soluble in water, say naval stores experts of the Bureau of Chemistry, United States Department of Agriculture. Turpentine soon leaks out from a barrel that has been carelessly or improperly glued, as well as from one containing any water, regardless of how well the glue was prepared or applied. Consequently great care must be taken in preparing the glue and applying it to the barrel, and finally also in so filling the barrel with turpentine that no water gets into it. Detailed directions for glueing turpentine barrels were issued recently by the department.

D. S. Bullock to Represent American Live-Stock Interests at Buenos Aires

With a purebred live-stock industry in the United States that is unsurpassed by that of any other country in the world, the opportunities for world commerce in American animals are immeasurable. Last year the United States Bureau of Markets sent two live-stock commissioners to South America to promote trade in purebred live stock in that country. As a result, $400,000 worth of purebred animals was sold in South America alone during the first six months of this year. The field is so promising that two more live-stock commissioners recently were sent to South America to follow up the work, make new contracts, and to develop the market for all breeds of stock.

Plans Permanent Office.

The United States Department of Agriculture now plans to establish a permanent office in South America in charge of an agricultural commissioner, and D. S. Bullock, of Wisconsin Purebred Bull Campaign fame, is the man who has been selected for that position. Mr. Bullock was born and reared on a live-stock farm. He graduated from the Michigan Agricultural College in 1902, and thereafter spent 10 years in South America as instructor of agriculture in the Araucanian Industrial Mission School, Temuco, Chile. In 1911 he was given the degree of master of agriculture by the Michigan Agricultural College, and in 1920 master of science by the University of Wisconsin.

Returning to the United States in 1912, Mr. Bullock became principal of the County School of Agriculture and Domestic Economy at Marinette, Wis. Here he organized among the farmers a cooperative arrangement for buying cattle. New settlers were assisted in the purchase of good cattle, and the banks were prevailed upon to extend loans with liberal time limits. The third year eight carloads of cattle were brought into the county, and the business grew to such an extent that last year a $25,000 company was formed to handle it. When Mr. Bullock first went to Marinette but 7 per cent of the land was under cultivation. To-day, partly because of the results secured in cattle work, 30 per cent of the land is under cultivation.

In August, 1916, Mr. Bullock was appointed extension representative in animal husbandry for the University of Wisconsin. Soon thereafter a meeting of officers of the breeders' associations in Fond du Lac County was called and a county purebred bull campaign initiated. The success of the county campaign led to a State-wide campaign. Half the counties in Wisconsin now have definite organizations to eliminate grade and scrub bulls, and during the year 1919 approximately 4,000 purebred bulls replaced grades and scrubs in the State. Wisconsin is supplying a large amount of the breeding stock of the dairy breeds for other States, 35,888 head having been shipped out of Wisconsin in a single year.

Success in Wisconsin.

Mr. Bullock's success in Wisconsin was the result of his thorough knowledge of live stock, his enthusiasm to make the State the leading purebred live-stock section in the country, his aggressiveness, and an innate ability to cooperate with others. When the nation-wide "Better Sires—Better Stock" campaign was launched, the methods followed were largely those that had been used in the Wisconsin and other State campaigns.

It was this ability of Mr. Bullock's, coupled with an intimate acquaintance with Latin-American people and their customs for 10 years, that led the Bureau of Markets to select him for the Government's work in South America. It has been found that foreign buyers, while appreciating the fact that excellent purebred live stock can be secured in the United States, are unfamiliar with the methods of procedure in locating the kinds of breeds they desire quickly and with a minimum of expense. Foreign buyers, unacquainted with any person or agency in whom they feel they can place confidence, experience great difficulty in making satisfactory purchases in this country. Their difficulties are also increased by the differences in language, trade customs and practices, and financial methods of the two countries. It is the desire of the United States Department of Agriculture to aid foreign buyers and to assure them that it is organized to afford them all possible protection by placing at their command its service and facilities. Upon application to the Bureau of Markets persons contemplating purchases of live stock in the United States will be aided by its experts in locating and forming proper contacts with individual breeders or breeders' associations with whom they may deal. Expert advice will also be given by the Bureau of Animal Industry as to ways of dealing with problems relating to the care and inspection of live stock. The department has approximately 17,000 representatives throughout the United States in close touch with farmers and breeders.

The field for placing American purebred animals in South America is particularly attractive not only because of the proximity of the country and good shipping facilities, but because of the similarity of climatic conditions under which the animals thrive. Purebred live stock originating in certain parts of the United States can be safely transferred to those parts in South America having corresponding temperature ranges without need for acclimating the animals. This reduces the risk and induces the belief that the animals will thrive as well as they did in their native home. This is proved by the fact that large numbers of American live stock have been exported to South America without loss.

Will Confer with Breeders.

Before starting for South America, Mr. Bullock plans to confer with the secretaries of the various breed associations in the United States to secure assurance of their cooperation in the work that is to be undertaken in South America. All of these associations are sympathetic and extremely enthusiastic over the Government's policy.

The Government's office at Buenos Aires will be a distributing center for breed literature of the breed associations here, and a definite propaganda will be initiated to acquaint South American buyers with the kinds of stock to be had in the United States. A number of the breed associations are also planning extensive advertising campaigns in South America in Spanish, the language of most of the South American countries, and Portuguese, the language of Brazil. Mr. Bullock also proposes to give a series of illustrated lectures in the agricultural schools in Uruguay, Paraguay, Argentina, and Chile regarding the American live-stock industry.

Mr. Bullock will be the medium in South America through which buyers may get in touch with the United States Department of Agriculture and with the secretaries of the national breed associations. He will also give advice regarding shipping methods, the procedure to be followed in financial transactions, and with regard to insurance and the issuance of free health certificates by the Department of Agriculture.

As the type of animal necessary for the production of large yields of milk is entirely different from that of the beef animals, it has been impossible to produce a breed which would combine these functions and be of superior merit for both purposes.

Weekly News Letter

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MORE AREAS QUARANTINED FOR EUROPEAN CORN BORER

In accordance with an order signed by the Acting Secretary of Agriculture, the Federal quarantine against the European corn borer has been extended to include additional towns in Massachusetts and New York. In Massachusetts the towns are Bridgewater, East Bridgewater, Wareham, and Whitman, in Plymouth County; Canton, Dedham, and Needham, in Norfolk County; and Maynard and Westford, in Middlesex County. The towns in New York are Broadalbin, in Fulton County, and Glen, in Montgomery.

This action by the Department of Agriculture supplements the former quarantine order of the Secretary of Agriculture, March 15, 1920, against certain parts of Massachusetts, New Hampshire, New York, and Pennsylvania to prevent interstate shipment of carriers of the corn borer. No restrictions are placed upon shipments from points in the quarantined State outside the infested areas.

The articles specifically covered in the quarantine are corn and broom corn, including all parts of the stalk; celery, green beans in the pod, beets with tops, spinach, rhubarb, oat and rye straw as such or when used as packing; cut flowers or entire plants of chrysanthemum, aster, cosmos, zinnia, and hollyhock; and cut flowers or entire plants of gladiolus and dahlia except the bulbs without stems. The restrictions do not apply to shelled corn and clean seed of broom corn, nor to other articles after they have been manufactured or processed in such way as to eliminate risk of carrying the corn borer.

All the articles covered may be moved interstate to points outside the infested area only after they have been inspected by the United States Department of Agriculture and certified to be free from the corn borer.

MAY DECIDE TO QUARANTINE AGAINST JAPANESE BEETLE

A quarantine upon the States of New Jersey and Pennsylvania to prevent the spread of the Japanese beetle, known for several years to occur in restricted parts of New Jersey and now discovered also in southeastern Pennsylvania, was considered at a hearing held here September 10 by the Federal Horticultural Board, United States Department of Agriculture. Those interested in the proposed quarantine appeared and were heard either in person or by attorney.

The hearing took up the question of placing restrictions on the movement from these States of farm, garden, and orchard products of all kinds, including fresh and perishable crops, such as green corn, tomatoes, beans, peas, cantaloupes, watermelons, grapes, raspberries, blackberries, cherries, peaches, apples, and all kinds of fresh fruits and vegetables; grain and forage crops of all kinds; nursery, ornamental and greenhouse stock, and all other plants, including bulbs and cut flowers; and soil, compost, and manure, other than fresh manure, thought necessary to prevent the spread of the beetle to other States.

If it is found advisable to quarantine the entire States of New Jersey and Pennsylvania, the restrictions imposed on these products will be limited substantially to the areas actually determined to be infested by the Japanese beetle. Officials of the Department of Agriculture look upon the Japanese beetle as a particularly dangerous insect pest. It has not yet become widely distributed in other parts of the United States, and efforts are being made to prevent its spread.

COMBINE EFFORTS TO MAKE NATIONAL FOREST POPULAR

An example of effective cooperation between Government authorities and private interests in making the recreational facilities of the national forests available to the general public is found in the case of the San Isabel National Forest in Colorado, the attractions of which have been popularized through the concerted efforts of various organizations. What has been accomplished suggests that other communities near national forests could profitably undertake similar work. The total amount of money expended and to be expended this year in making this forest accessible to the public is $167,000, of which the Forest Service, United States Department of Agriculture, contributes $36,000 for roads, while the rest is supplied by various cooperating interests. The San Isabel Recreation Association has promised $10,000 for the cooperative fund, if that much is needed. The Spanish Peaks Mountain Playground Association voted to raise $18,000 for recreation improvements within the forest. The town of La Veta has tendered the Government a deed of conveyance to a section of land purchased by the town for a park, in order that it may be fitted into the general scheme for the development of the forest. A large tire concern is preparing a special road map of the tract for free distribution, and a film company and a railroad passing through this region have both taken motion pictures of the scenic features of this recreation area. The latter concern's pictures are to be used in advertising the forest in the Middle West. The attractions of San Isabel National Forest are thus being made known to thousands of people.

KANRED SUCCESS IN KANSAS GRATIFYING TO SPECIALISTS

Deep interest in the success of Kanred wheat reported from Kansas is being shown by specialists of the Bureau of Plant Industry of the United States Department of Agriculture. According to reports this year's acreage of Kanred is estimated by Kansas authorities to have been about 500,000 acres. Of this total area 15,000 to 20,000 acres, grown by selected farmers, have been carefully inspected in the field by representatives of the Kansas Agricultural College and certified as furnishing sources of seed of high quality and purity.

Kanred is a variety of hard red winter wheat developed by the Kansas Agricultural Experiment Station. It was obtained by selection from the Crimean variety of hard red winter wheat introduced from Russia by the Bureau of Plant Industry of the Federal Department of Agriculture and widely grown in Kansas and adjacent States.

It was developed by the Kansas scientists with special reference to conditions there and has proved to be a better yielder by 3 to 5 bushels to the acre compared with other hard red winter wheats. Its better yield is due in part to greater resistance to winterkilling and to rust and in part to its slightly earlier ripening, say specialists of the department.

Federal Reports Show Rapid Headway Against Cattle Ticks in Georgia

The cattle industry in Georgia is being reclaimed from the dominion of the tick. Federal reports show that during July 888,219 dippings of cattle were supervised by Federal, State, and county employees. This figure is one of the largest recorded in a State east of the Mississippi River since systematic tick eradication began in 1906.

Georgia is using 3,700 dipping vats to combat the parasite which for years has stunted the cattle and caused heavy mortality. The dipping is done in arsenical solutions approved by the United States Department of Agriculture for the eradication of cattle ticks.

Already 36,674 square miles in the State of Georgia have been released from Federal quarantine, and cattle from the released districts may now be moved interstate without the former restrictions. With a continuation of the extensive dipping program, Federal officials expect that large additional areas in Georgia will be ready to be released from quarantine in December, when the work for 1920 is completed.

Live-Stock Exhibition.

As evidence of interest in improved live stock an international live-stock exhibition will be held in Atlanta this fall, and it is expected that many purebred animals brought from other States for exhibition will remain in Georgia as foundation stock for an extensive and profitable cattle industry. Reports from Federal tick-eradication supervisors indicate that the introduction of fine live stock in Georgia is following very closely on the trail of the departing tick. Competition at the live-stock exhibition, it is stated, will be as keen as shows of similar character in Northern States and in regions of the South now free from ticks.

Florida the Last Stronghold.

From present indications Georgia will be one of the next States to be entirely freed from ticks. The progress is due largely to the energy of cattle owners in supporting tick-eradication work and also to their foresight in realizing that live stock can not be grown profitably until the tick menace is removed.

Florida, the sister State of Georgia lying to the south, continues to be heavily infested with cattle ticks and is expected to be the last stronghold of that parasite in the South. The Department of Agriculture points out, however, that by dipping 2 million cattle per month cattlemen in Florida could make rapid progress toward removing that State from Federal quarantine. In fact, with the larger tick-infested area of Florida the dipping of 2 million cattle per month would be no greater undertaking than the extent of systematic dipping now in progress in Georgia. The fact that a larger per cent of cattle are owned in Florida by persons having little or no land makes the problem somewhat more difficult, but not seriously so. Notwithstanding these problems, the detailed Federal records prepared each month for all regions in which ticks occur show systematic "mopping up" of this pest, and the final extinction of ticks in the United States is a matter merely of a few years.

FINDS THREE VIOLATIONS OF GRAIN STANDARDS ACT

Three violations of section 5 of the United States grain standards act are disclosed in recent findings of the Secretary of Agriculture, who is charged with administration of the act. While in such cases the act provides for no penalty, the Secretary of Agriculture is authorized to publish his findings.

Messrs. Scoular & Bishop, of Superior, Nebr., contracted to sell a carload of No. 2 white corn to a dealer in Douglas, Ariz. The car was invoiced at the price agreed upon for No. 2 white corn, without stating the grade, and without forwarding the inspection certificate which showed that the corn graded No. 5 white according to United States grain standards. The receiver complained of the quality of the corn and forwarded samples to Scoular & Bishop and to the Secretary of Agriculture. The sample sent to the Department of Agriculture was analyzed and found to be No. 5 white corn, the same grade as that found by the inspector who had graded the carload before shipment.

Two cars of oats were shipped by the Webster Co., of San Antonio, Tex., to Texas City, Tex., for export to Cuba in partial fulfillment of a contract calling for No. 3 clipped oats. The oats in these cars had previously been inspected and graded No. 4 red clipped by an inspector licensed under the United States grain standards act. The Webster Co. withheld the inspection certificates and represented by means of invoices that the oats shipped were No. 3 clipped.

M. T. Cummings, of Lincoln, Nebr., had contracted with a dealer in Morrowville, Kans., for one carload of No. 3 or better mixed corn. The car was loaded with 66,000 pounds of corn, which was "out" inspected by a licensed inspector and a grade of sample grade mixed assigned, the determining factor being foreign material and cracked corn. Mr. Cummings was informed of the grade assigned, but the car was invoiced to the purchaser at the contract price for No. 3 mixed corn. The M. T. Cummings Co. advised the purchaser by letter that "out" inspection had not been secured on the car and furnished an "in" inspection certificate showing a grade of No. 3 mixed, the grade assigned to the corn contained in the car on arrival at Lincoln, Nebr., with 91,220 pounds before being unloaded into the elevator. The Cummings Co. represented to the purchaser that the corn shipped was No. 3 mixed, when in fact it had been graded sample grade.

BULL ASSOCIATIONS SUITED TO DAIRYING COMMUNITIES

Are you one of those who think a bull association can not be formed in a community like yours? asks the United States Department of Agriculture. If so, probably you are mistaken, for experience shows that bull associations are adaptable to nearly every kind of dairy community that can be found. The annual report of the Dairy Division shows that there are now about 120 bull associations in 30 different States of the Union, and among all classes of communities.

The extension men of the Dairy Division find that in very many cases, when the idea of a bull association is discussed, people think that, while such an organization is clearly a good thing on general principles, the conditions in their particular community are not suitable. Many times, in such places, it has been tried, and to the surprise of some it has been found that the conditions did not stand in the way at all. There are many such communities. They have men engaged in dairying; they have scrub or other inferior bulls which should be replaced; and they have the need for better bulls.

Any community in which there are 200 or more cows can better afford to have a bull association than it can afford to be without one; and if the people of the community are neighborly and able to work together in every-day business affairs, they can just as well have a strong association with all its benefits.

May Replace More Expensive Sprays—High Price of Copper Leads to Tests

Efforts to obtain a copper fungicidal spray for fruits and vegetables that would be as efficient as but less expensive than standard Bordeaux mixtures have led to encouraging experiments with the Pickering Bordeaux sprays, the results of which are contained in a bulletin now issued by the United States Department of Agriculture. The high price of copper sulphate, known as bluestone or blue vitriol, during the war caused chemists of the department to turn their attention to the Pickering Bordeaux sprays which contain less of this high-priced chemical.

Results of Tests in England.

The so-called Pickering Bordeaux sprays had been tested to a limited extent in England, where laboratory tests indicated that they were more efficient per unit of copper than the Bordeaux sprays. Pickering sprays, sometimes called Pickering limewater sprays, are prepared by mixing saturated limewater with dilute solutions of copper sulphate, and contain their copper in the form of basic copper sulphates. If the results obtained by Pickering, the British chemist from whom the sprays get their name, in the laboratory in England hold true under field conditions in America, it is obvious that a great saving in copper in this country may be effected.

It is believed that the experiments by the department lay a basis for further studies to be conducted in various parts of the country. The opinion is expressed that from the information provided in the bulletin the various agricultural experiment stations and other agencies in the country will be able to devise formulas for copper fungicidal sprays for certain crops made with less copper sulphate than standard Bordeaux, which will prove just as efficient as the more expensive spray. It would be impracticable, it is pointed out, for the department to devise these formulas itself. Field conditions vary in different sections of the country, and experiments would have to be conducted in these different sections in order to work out a spray suitable to local needs.

Tests Cover Three Seasons.

The experiments, which covered three seasons, were conducted with Pickering Bordeaux sprays containing the equivalent of from 0.06 to 0.7 per cent of copper sulphate. Their efficiency was compared with that of standard Bordeaux mixtures containing the equivalent of from 0.75 to 1.25 per cent of copper sulphate.

The results of the tests made on potatoes in Maine indicated that, per unit of copper present, the Pickering Bordeaux sprays were twice as effective as the standard Bordeaux mixture. The strongest Pickering Bordeaux sprays, containing the equivalent of from 0.6 to 0.7 per cent of copper sulphate, controlled late blight on potatoes and the fungous rots of cranberries in New Jersey very effectively. Their control of certain fungous diseases on grapes and apples was not definitely determined, the results being complicated by burning or other injury to the foliage and fruit. Pickering sprays containing less than the equivalent of 0.6 per cent of copper sulphate were not effective as fungicides for potatoes and probably not for cranberries.

Increased yields of tubers were obtained on plats of potatoes treated with standard Bordeaux and with the stronger Pickering Bordeaux sprays, indicating that the latter sprays exerted similar stimulating and protective action on the plants. The adhesive properties of Pickering Bordeaux sprays varied with the foliage to which they were applied. They adhered to potato and cranberry leaves in practically the same degree as the standard Bordeaux, to apple leaves in a somewhat higher proportion, and to grape leaves in a lower proportion.

No Harm to Maine Potatoes.

No injurious effects followed the application of Pickering Bordeaux sprays to potatoes in Maine or to cranberries in New Jersey. The sprays, however, proved to be too caustic for use on apples in Virginia or on grapes in New Jersey and Virginia. Pickering Bordeaux sprays, it is said, can not be used on tender foliage.

Barium-water sprays of the Pickering type, made with barium hydrate instead of lime and containing the equivalent of 0.7 per cent of copper sulphate, proved very successful against the late blight of potatoes in Maine. Such a spray containing the equivalent of 0.6 per cent of copper sulphate was tested one season in Virginia and did not injure the foliage or fruit of the apple trees.

Department Bulletin 866, "Pickering Sprays," a report of the results of the experiments, may be had, upon request, of the United States Department of Agriculture, Washington, D. C.

FARMER'S WOODLAND EARNS HIM PROFIT OF $1 A DAY.

The annual growth is 0.65 cord per acre. 115 by 0.65 equals 75 cords (mostly poplar). He cuts an annual crop of 75 cords. His profit is $4.86 per cord. 75 by $4.86 equals $364.50.

INCREASES PER ACRE SHOWN IN RECENT TOBACCO YIELD

In yield per acre, tobacco has had its period of decline, followed by a recent period of gain. During 1865–1874 the national average yield per acre was 722.3 pounds, and it fell to 719.9 pounds in the following 10 years and to 714.4 pounds in 1885–1894. Thereafter the gain has been marked, and the average of 768.8 pounds during 1895–1904 was followed by 827.5 pounds during 1905–1914. During 1915–1919 the yearly yield ranged from 730.8 to 873.7 pounds. These average yields have been established by the Bureau of Crop Estimates.

To discover whether this apparent gain in yield per acre, which began with the decade of 1895–1904, is not an arithmetical fiction due to a redistribution of the crop geographically, it has been analyzed by States, with the result that the gain has been found in all of the prominent tobacco States for periods covering the last 20 to 40 years. In the last 10 years the average yield per acre in these several States has gained upon a former decade with the lowest average, at the end of a decline, by 12 to 40 per cent. The gain in Kentucky is 22 per cent in 40 years, in North Carolina 40 per cent in 30 years, in Virginia 19 per cent in 30 years, in Ohio 16 per cent in 20 years, in Pennsylvania 20 per cent in 20 years, and in Wisconsin 24 per cent in 40 years. These increases, as well as the increase for the national total, must express the results of an improved agriculture.

The story is different when yield per acre is compared with population. The average yield of tobacco per acre per 1,000,000 of the population was 18.5 pounds in the decade 1865–1874; it fell to 14.4 pounds in the next decade, to 11.5 pounds in 1885–1894, to 10.1 pounds in 1895–1904, and to 9.1 pounds in 1905–1914, and the yearly averages for 1915–1919 range from 6.9 to 8.3 pounds. This evidence unequivocally indicates that the yield of the soil in tobacco in relation to population has declined for half a century. The foregoing is extracted from an article contained in the forthcoming yearbook of the United States Department of Agriculture.

Pointing Out the Milky Way to Health—Milk Campaigns Combat Undernourishment

What is a milk campaign?

Just ask some one from Boston, Detroit, Pittsburgh, Spokane, Seattle, or Kansas City—or in fact from any of the 34 cities that have completed campaigns during the past 18 months. These citizens will tell you what a milk campaign can do for health improvement; and it is obvious that when a movement spreads as rapidly as the milk campaign has, there is something to it.

The milk campaign has brought results. That is why it is popular. It is the chief answer and remedy, all in one, to the question, "What's wrong with our children's diet?" or our own diet, for that matter.

Too Much Undernourishment.

American citizens, who have always been noted for their progressiveness, will be surprised to learn that right in their own country there is a large per cent of undernourishment among children. Figures from many parts of the country prove this, according to the milk utilization specialists of the United States Department of Agriculture, who are cooperating in the milk campaigns. In our greatest city, New York, for instance, it was found that the percentage of undernourished children had increased from 5 per cent in 1914 to 21 per cent in 1917–18, and that this increase had accompanied a decrease of 25 per cent in milk consumption. Figures from country districts tell the same story. In one Missouri county is was found on weighing and measuring 400 school children that 50 per cent were 10 per cent and more underweight for their height and age.

Investigations showed that this condition was not confined to any one class—rich, poor, and middle class all being represented. Apparently, then, it is not lack of money which has brought about this condition, but rather lack of information.

As a means of combating this growing tendency toward undernourishment, the idea was developed of designating one or two weeks as milk weeks, and concentrating all available forces to the task of bringing before the people of a community the food value and healthful qualities of milk. This was the origin of the milk campaign.

A milk campaign is a highly organized educational drive in a city or in a rural district. When it has been found by the citizens that a campaign is needed, the first step is to call on the State college of agriculture for cooperation. If the conditions warrant the campaign, the cooperation of the Dairy Divisions, United States Department of Agriculture, is requested by the extension department of the college of agriculture. The college generally furnishes a corps of trained lecturers, and the Dairy Division lends assistance in planning the campaign, and contributes literature, exhibits, and some personal assistance if desired.

Neither the college of agriculture nor the Federal Dairy Division will cooperate in a campaign until it has been found that the people of the locality really want it and are willing to work for it, that the supply of milk is clean and wholesome, and that the price of milk is right and will not be raised by the dealers, due to increased demand.

Effective Campaigns At Small Cost.

What does a milk campaign cost? Figures from campaigns already completed show that the cost varies from $85 to $8,000, depending largely upon the size of the area and the amount of advertising used. The cost of a campaign, however, is no indication of the results. Some of the least expensive campaigns have been the most effective. The campaign in Davenport, Iowa, which brought unusually good results, was put on for the small sum of $85. Funds are contributed locally for the work.

Organization in carrying out such a campaign, especially in the larger cities, is of the utmost importance. Long before the starting of the active work, the committees in charge of various activities, such as publicity, finances, transportation, etc., are chosen, and the entire plan of the campaign is mapped out. The cooperation of the various local organizations is secured, such as board of health, newspapers, milk dealers, schools, churches, chamber of commerce, etc.; and each one is made to feel that it has an active part in the work of the campaign.

When the opening day has arrived everything is in readiness, and every cog in the wheels of this great machine moves smoothly. Press notices and advertisements appear in the local papers. Posters on the food value of milk and displays in the store windows greet the eye at every turn. The demonstrators and lecturers hurry from point to point to meet their numerous engagements, spreading the gospel of milk and good health in factories, stores, schools, clubs, theaters, churches, and the meetings of labor unions and various other organizations.

Of all these methods of spreading the message of milk, none has proved more effective than work in the schools. In fact, records show that there is a sharp line of demarkation between the results obtained with and without school cooperation. They vary from 10 to 30 per cent increase in consumption in cities where the schools take a part in the work, down to only 1 to 3 per cent where they do not.

Schools an Important Factor.

Through the schools the children are reached directly. They learn from the women extension workers that milk will nourish their bodies and help them grow. Contests in designing milk posters and in writing milk essays also stimulate interest in the subject.

Children in city schools, and especially those of foreign extraction, know very little about milk. Many have never seen a cow, and when asked where milk comes from, answer: "From the store." One little girl thought a cow was 4 inches high.

Other children, however, seem to know more about it. One little girl said, "Milk makes one strong, healthy, and wise"; while another child vouchsafed the information that "the four glasses of milk in a bottle made him just four times better than he already was."

A novel method of urging the use of milk was tried out in a New Jersey city with success. Just as school was letting out a cow was brought up in a truck and milked in the street. At one school 600 children gathered around to see her milked. "Such excitement, you would have thought a circus was in town," wrote one of the extension workers. It took two policemen and five workers to restrain the excited mob. One cow, of course, could not furnish enough milk for such a crowd, but an additional supply was brought up in trucks and eventually everyone got a drink of real milk. Mothers came from all around bringing their babies with them.

Most children like milk anyway, and when milk is supplied to them in the schools they rarely leave a single drop in the bottle, especially if they can drink it through a straw. Parents often raise the objection, when advised to give their children more milk, that their boys or girls will not drink it. When the boys and girls come from school, however, and tell their parents that they want milk they get it.

When a campaign is closed the work is followed up with milk-feeding demonstrations in the schools. In all cases on rec-

ord the feeding of milk has resulted in substantial gains in weight, rate of growth, and mental alertness. The results of the feeding demonstrations following the Massachusetts campaign, for instance, give some idea of what is being accomplished. In Hampden County 48 undernourished children were given a quart of milk daily for six weeks. These children made an average gain of 1 pound and 13.7 ounces, while the normal gain for healthy children carefully fed, for the same period, would have been only 11 ounces.

Eight of these children made phenomenal gains of more than five times what normally they would be expected to make. One of these was a lad who had never had milk except occasionally on Sundays. He was delighted with his gain of 64 ounces in six weeks. His color and energy on the last weighing day, as he consumed with relish his bowl of bread and milk, indicated that he had gained in vigor and alertness as well as in weight.

Of course the results of milk campaigns in different cities and rural districts have varied greatly, but where a complete campaign has been put on the increase in consumption of milk has been found to be from 10 to 30 per cent. Other dairy products, too, such as butter, cottage cheese, and buttermilk, have come in for substantial gains. In Detroit, for instance, a 35 per cent surplus of milk which occurred during the spring season of heavy production was eliminated. The use of whole milk increased 10 per cent, butter 15 per cent, cottage cheese 3 per cent. For one firm alone the weekly sales of butter were increased 20,000 pounds, and of milk 50,000 quarts. Topeka, Kans., reports that the sales of butter jumped 30 per cent, and of milk 25 per cent.

HOW TO CONTROL HOG PARASITES.

To keep swine healthy and thrifty, provide them with sanitary quarters and a clean wallow, in addition to proper feed. But when external parasites affect hogs an effective remedy must be used if losses are to be avoided. Lice and mange mites are the two principal kinds of external parasites occurring among swine. The mites are particularly injurious to pigs and poorly nourished hogs. "Hog Lice and Hog Mange" is the title of a new farmers' bulletin recently issued by the United States Department of Agriculture, telling specifically how to identify the parasites and describing effective and economical remedies. Plans of hog wallows and dipping vats, together with directions for building them, are given. For information on this important subject, ask the Department of Agriculture, Washington, D. C., for Farmers' Bulletin No. 1085.

Urge Special Protection for Seedlings—1920 Good Seed Year for Long-Leaf Pine

Officials of the Forest Service, United States Department of Agriculture, returning from the South report that the year 1920 is an unusual seed year for long-leaf pine. The range of this tree is roughly from North Carolina through the Atlantic and Gulf Coastal Plain States to eastern Texas. The occurrence of a good seed year is noteworthy, because this species matures full crops of seed not oftener than once in six or eight years.

Ripens Early in September.

The seed commonly ripens by early September and falls to the ground soon afterward. If the autumn weather is not unusually dry, the seed germinates in one to four weeks. Long-leaf pine produces large seed full of rich food, so that it is eagerly sought by insects, birds, and hogs.

In view of the fact that many thousand acres will probably be carpeted with long-leaf pine seedlings next spring, Forest Service officials urge owners of long-leaf pine lands to take special care in protecting the seedlings from fire. They point out that it would cost $5 to $10 per acre to do artificially what nature has done gratis. Most of the tender seedlings are killed during the first year or two of their existence. Many of the remaining small trees succeed in surviving fires, though with more or less injury. Razorback hogs in regions where these trees grow destroy practically all the seedlings they can get at by eating the soft, succulent bark around the tap root. It is urged that, if possible, they be excluded entirely from land growing seedlings.

On lands burned over in the cold season and not oftener than every two or three years the majority of the long-leaf seedlings may be expected to survive. Annual burnings by very hot fires kill practically all this young growth in the course of a few years. The common belief that fires do not injure long-leaf pines or that they are even necessary for natural reproduction is without foundation, though the tree does offer remarkable resistance to injury from fire. Tender young seedlings, however, are easily killed, and there is every reason for beginning this year to provide permanent protection for these valuable trees.

FOREST FIRES CAUSE DEFICIT.

The weeks of the greatest danger from forest fires in the West have just passed with a total destruction to date so large as to use up nearly twice the amount appropriated for fighting these conflagrations. The sum set aside by Congress was $250,000, and to date the Forest Service of the United States Department of Agriculture has had to spend approximately $470,000 in efforts to check fires. Despite the heavy deficit created, the Forest Service officials are, on the whole, much relieved that the summer has not been marked by greater destruction of timberland. In many parts of the West, particularly in Idaho and Montana, very dry weather created a grave situation, and for a time there was danger that flames, once started, might sweep large areas. The situation was such that the Forest Service felt called upon to ask the Secretary of Agriculture to authorize the creation of a deficiency of $475,000 in excess of the appropriation. The coming of early fall rains and more favorable weather conditions generally has so improved conditions, however, that it is hoped the whole of the deficiency will not be used.

MAY FIND PRACTICAL USES FOR GAS MADE FROM STRAW

(Continued from page 1.)

dustries in New York City during the fall of 1918. This equipment was later purchased and improved by the department. The Canadian investigators succeeded in operating an automobile with the product. However, the fuel supply was carried in a large flexible bag on the top of the car, a method of doubtful practicability.

Several valuable by-products are obtained in the manufacture of the gas. Carbon residue suitable for manufacturing lampblack of exceptionally fine quality is one. This residue also contains certain amounts of potash, phosphates, and nitrogenous compounds, which give it fertilizing value.

The tar and ammoniacal liquids resulting from the process, aside from their value as disinfectants and preservatives, may prove useful in the dye industry. If the engineers succeed in perfecting the present apparatus and in reducing the cost of production, there is no doubt that straw gas will have an important commercial future.

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COTTON GROWERS MUST RECEIVE FAIR PRICES, SAYS SECRETARY

Analyzes Present Cotton Situation in Letter Answering Inquiry.

Present Surplus of American-Grown Cotton Held in United States Said to Be Largely of Very Low Grade—New Crop Will Make Higher Grades Available.

"It is absolutely essential to the continued production of American cotton that the cotton farmer receive a price for his cotton which will meet his legitimate expenses and return a reasonable profit," declared Edwin T. Meredith, Secretary of Agriculture, in a recent letter to E. S. Candler, of Corinth, Miss., replying to an inquiry concerning the decline in cotton prices. The Secretary analyzed the present cotton situation and the probable effect the new crop would have upon prices.

It is the general belief, Secretary Meredith said, that the existing surplus in the United States of American-grown cotton is largely composed of very low grades which have been accumulated from several crops and for which there has been almost no market. He expressed the belief that nearly 3,000,000 bales surplus of old-crop American cotton would be on hand throughout the world on October 1. The new crop is estimated at about 12,750,000 bales.

The Secretary's Letter.

Secretary Meredith's letter was as follows:

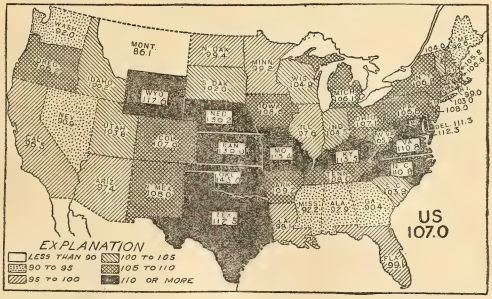
"Receipt is acknowledged of your letter of August 23, in which you direct my attention to the decline in the price of cotton and ask me to write you my views regarding the existing condition.

"Briefly stated, the situation in the cotton market may be analyzed as follows: The world's consumption of American cotton, exclusive of linters, during the past year has been more than 12,000,000 bales, or, in round figures, 1,000,000 bales per month. The supply of American cotton in the United States at the end of the cotton season, on July 31 last, was, in round numbers, about 3,250,000 bales, excluding linters, and was estimated for the entire world at about 5,000,000 bales or about five months' supply if all of this surplus were used at the rate of 1,000,000 bales per month. As it is usually around the first of October before new cotton becomes available at the mills for consumption, it will be seen that two months of the new crop year must elapse and at the rate for the past year 2,000,000 bales of the surplus will be consumed before this year's crop reaches the mill. Accordingly, there will probably be nearly 3,000,000 bales surplus of old-crop American cotton on hand throughout the world on October 1, next.

"In addition to this surplus, the cotton grown this year will be coming on the

(Continued on page 8.)

GENERAL CROP CONDITIONS BY STATES ON SEPTEMBER 1.



The map shows the composite condition of all crops in each State on September 1. The relative importance of each crop is considered in obtaining the State averages. One hundred represents the 10-year average (not the normal) condition of the State.

TESTS SHOW WEARING QUALITY OF VARIOUS ROAD MATERIALS

Bureau of Public Roads Seeks Information of Value to Highway Engineers.

Tests Made with Motor Trucks of Various Weights and Loads and Going at Different Speeds—Results May Lead to Equitable Basis for License Fees.

Such important questions as how hard a heavy motor truck pounds a pavement when going at 5 miles an hour and at 15 miles an hour are being answered by investigators for the Bureau of Public Roads, United States Department of Agriculture, in a series of scientific experiments, which, when completed, promise to be of great value to highway engineers. Already sufficient tests have been made to show that increased speed of a vehicle equipped with hard rubber tires tremendously increases the impact which its wheels make on the roadway where there is any unevenness. On the other hand, where pneumatic tires are used increased speed adds comparatively little to the impact. It has been suggested that these tests will be of great value not only in settling questions of design but may also lead to a rational basis for determining license fees for motor vehicles.

Trucks Used in Tests.

Trucks have been used in these tests varying in size from a 1-ton truck up to a 7½-ton truck carrying an excess load. Each truck was run over a special recording device embedded in a roadway and the impact which resulted when one of the wheels made a 2-inch drop from a

ledge built in the surface caused the deformation of specially prepared copper cylinders forming part of the apparatus. The magnitude of the blow was accurately ascertained in pounds by measuring the extent to which the cylinder had been forced out of shape.

Recent tests were made with a 3-ton truck of well-known make loaded with a 4½-ton load so that the total weight on each rear wheel was 7,000 pounds, the unsprung portion (that not supported by the springs) being 1,700 pounds and the sprung portion (that portion supported by the springs) 5,300 pounds. The truck was equipped first with an old solid tire that had been worn down to a thickness of 1 inch. Then, with exactly the same load on the truck, a wheel was used fitted with a new solid tire 2½ inches in thickness. And finally the truck was equipped with pneumatic tires 42 by 9 inches and blown up to a pressure of 142 pounds per square inch. The following table shows very clearly the bad effects an old tire is likely to have on a road surface and the greatly lessened impact produced by trucks when they are equipped with pneumatic tires. The tests show that as the vehicle's speed increased the impact from the old hard rubber tire increased greatly. The impact from the new hard rubber tire was somewhat less.

Results of Impact Tests.

Approximate speed.	Height.	Old tire.	New tire.	Pneumatic tire.
5.7	2-inch.....	11,600	9,400	7,100
10.2	...do.....	18,500	14,100	7,800
14.6	...do.....	26,500	18,700	8,300

Related to these tests is another series which utilizes the figures secured in the first experiments. A number of paving slabs were tested by means of a machine designed to give impacts equivalent to those produced by the rear wheel of the heavy truck already referred to. The unsprung portion of the weight of this machine is 1,500 pounds and the sprung portion weighs 6,000 pounds. The tests were made by raising the entire weight through a height of one-eighth of an inch, allowing it to fall 500 times, then to a height of one-half inch with 500 repetitions, then three-eighths inch more in height, and so until the slab failed. To date, about 12 slabs have been tested, laid on a rather wet subgrade. A surprising difference has been found in the strength of the different types of pavements tested. The total number of blows required to cause failure have varied with the different slabs from 67 up to almost 2,000. All these data promise to be of the greatest value to engineers in selecting material for roads of various types.

The Bureau of Public Roads is also making a study of the relative wearing qualities of different types of pavements and tests have been about completed on a short section of pavement containing 49 different types subjected to the wear of a special truck equipped with five large cast-iron disklike wheels. The relative wearing qualities of hard as compared with soft brick are brought out very distinctly in this test. The resistance to wear of various kinds of stone block sections is also shown up to good advantage. A chance to compare grout and asphalt fillers for both brick and stone block is furnished by this investigation. Likewise the relative wearing qualities of concrete when mixed with various kinds of coarse aggregates is indicated.

Subgrade Materials.

The investigation of subgrade materials, started a few months ago with the cooperation of the district engineers and State engineers, is proceeding at a very satisfactory rate. A number of samples have been received from various parts of the country and laboratory analyses of many of these samples are partially completed. The methods being used by the division of tests will shortly be published as a paper so that any other laboratories wishing to conduct similar investigations may have some guide as to the method of procedure being followed by the Bureau of Public Roads.

The samples analyzed have been taken from parts of the roads that have failed very badly as well as from adjacent parts of the same roads that have withstood heavy traffic successfully. It is hoped that by a comparison of the laboratory results on these samples with the reported behavior of the road in service differences in the subgrade materials will become apparent so that we will be able to say what physical characteristics soils must possess to give them high bearing value.

Urges Growers to Wipe Spray Off Fruit—Heavy Coating Often Disfigures Product

Where fruit growers late in the season have sprayed fruit so heavily as to leave a residue on it, the United States Department of Agriculture urges them to remove the coating by wiping or other means that will make the fruit acceptable in the market. One method recommended for apples and pears which can be followed at a cost of a few cents per box is to wipe the fruit with cotton gloves. It is pointed out that if heavy rainfalls do not occur after heavy late sprayings the coating that remains may disfigure it sufficiently to arouse apprehension in the minds of the consumers, even though the residue may be entirely harmless. In some cases, however, heavy late spraying has been sufficient to be actually injurious, and so subjects such fruits to seizure under State or Federal food and drug laws.

Often Spray Late.

Where apples and pears when harvested show evidence of spray residues which have not been removed in picking, handling, grading, and packing, it is recommended that such fruits be systematically wiped before being placed on the market or packed for shipment. While this precaution is applicable to all fruit sprayed late in the season, it is especially important in the more southern apple districts, where the grower is often compelled to spray late to protect the fruit against bitter rot and in irrigated orchards of the West and Northwest where protection of apples and pears against the later broods of the codling moth is secured by spraying with arsenate of lead.

While at this season the department's specialists are laying emphasis on the importance of wiping fruit that has a residue from spraying, they also take occasion to urge that no grower should suppose fruit injury resulting from neglect of proper spraying early in the season can be corrected by belated spraying. Heavy late spraying undertaken in an effort to make up for what should have been done earlier is strongly condemned.

The practice of spraying growing fruit properly marks one of the most important steps in horticultural progress and is responsible, to a large extent, for the sound, attractive appearance of fruit now on the market, which is, in marked contrast to the insect-injured and disease-spotted fruit so prevalent a few years ago.

Top dressing the winter grain crops, such as wheat and rye and in the South oats, is highly advisable. Manure thus applied protects the crop from winter injury as well as adding to its plant food. For best results on winter grain the top dressing must be light enough to avoid all danger of smothering, nor should enough manure be applied to induce an overgrowth of straw and consequent lodging of the grain in the spring. Incidentally, if grass has been sown with the grain, a light top dressing is one of the best methods of insuring a "catch."

GROWERS CAN AVOID DANGER OF OVERSUPPLY OF GRAPES

Readjustment Taking Place in the Grape Industry of the United States.

Grape-Juice Industry is in a Thriving Condition and Demand for Product Exceeds Supply—. Specialists of Department of Agriculture Suggest Marketing Methods.

By utilizing every available outlet, the danger at present feared by the grape growers of this country—excess of supply over demand—can be greatly minimized, in the opinion of specialists of the United States Department of Agriculture, who have made a study of the marketing of northern grapes. They call particular attention to the fact that the grape juice industry is in a thriving condition and that the demand for its products has not been adequately supplied in the last few years, so that the grape juice factories can be relied on to absorb a fairly large proportion of the stock of many varieties formerly used for wine. Furthermore, the commercial manufacture of grape jellies, jams, and conserves, now developing very satisfactorily, promises to become even more important in the future.

Readjustment Taking Place.

The readjustment taking place in the grape industry in this country need not be confined to these lines, however, as the table-stock trade in grapes is also capable of material expansion, particularly in New England, the Middle Atlantic States, and in the South. Michigan shippers have demonstrated in the Middle West how a large market can be developed in grapes for table use by keeping in close touch with this class of trade.

In their study of the northern grape industry and its problems, the Department of Agriculture specialists found that a great many growers in North Central and Eastern States were uninformed regarding the methods and channels of distribution used in sections other than their own, and that in some cases their methods, particularly in making consignments, are very unbusinesslike. Hence, the department emphasizes the need of growers and shippers making a careful study of grape marketing methods.

For the benefit of all desirous of effecting an intelligent readjustment in this industry as necessitated by prohibition regulations, the department has compiled the results of this study by its marketing specialists in a bulletin soon to be issued entitled, "Marketing Northern Grapes." This 64-page pamphlet includes a detailed description of the various methods of marketing grapes now employed in different sections of the North Central and Northeastern States.

The bulletin points out the proper functions of the much criticized middlemen, distributors, jobbers, and retailers since taken as a whole they form the agency through which the farmers' grapes are now largely marketed. Undoubtedly sharp practices and inefficient methods have been, and to some extent still are, in use by some middlemen, but generally speaking, the methods and channels of marketing grapes are well developed and standardized, and competition has eliminated many dishonest dealers and many inefficient methods.

The simplest marketing method described consists in making sales by growers direct to local consumers. While this is practiced to a limited extent in all sections, it necessarily is not of large commercial importance. The second method is the direct sale by growers to consumers in neighboring cities and towns by express and parcel post. While having certain obvious advantages, it has the disadvantage of higher transportation charges than carlot shipments. It is not feasible for large vineyards.

A WHITE PINE STAND GROWS 1,000 BOARD FEET A YEAR.

Two acres of white pine, near Keene, N. H., were sold three or four years ago, before the war prices, for $2,000 on the stump. The total stand was 254 cords, which equals 170,000 board feet, or an average of 85,000 feet per acre. The trees were from 80 to 85 years old; so the growth on each acre was about 1,000 feet per annum and the gross returns about $12.20 per acre per annum.

Selling at Public Markets.

Grape growers near large cities sometimes find it to their advantage to haul their stocks to public markets where they sell direct to consumers or to retailers. If sales are made to retailers a profitable trade can be built up by energetic producers, although there are numerous disadvantages to this method which are discussed in detail in the bulletin. By far the most common method practiced by farmers who ship their own grapes is to consign to commission houses or brokers, who in turn sell to jobbers or sometimes direct to retailers. These agencies represent the shipper, disposing of the grapes at the highest prices obtainable, paying transportation charges, icing, drayage, deducting a certain rate of commission and remitting the balance to the shipper.

Unfortunately, very unbusinesslike methods of consignment are employed by many growers who ship their products indiscriminately to the nearest large market whenever they happen to be ready to pick, without any study of existing marketing conditions or even a notification to their agent. In the opinion of the Department of Agriculture investigators the commission-house business in the grape industry seems to be on the decline, due to unsatisfactory results caused by overloaded markets, etc.

Among other methods described in the bulletin is the common practice of selling to local buyers or car-lot assemblers at the market price. This is an easy method of sale for the grower, as it transfers the highly specialized business of marketing to the man with wide experience. Where there is keen competition the profit of the middlemen is kept down to a reasonable figure, but in some isolated sections abuses have crept into the system.

Cooperative Marketing Successful.

In many of the more important sections grape growers have cooperated to great advantage, the associations so formed doing work analogous to that of the local buyer or car assembler.

The problem of marketing is reduced to a minimum for growers who sell to juice factories. The demand of the latter has undergone a tremendous growth in the past few years. Sometimes when selling to juice factories confusion has arisen as to what the market price is, and often the decision is left to the factories.

While such situations are unfortunate, as they furnish a chance for unfair practices, in the main, leaders in the grape-juice industry may be relied upon to pay a fair price, the bulletin states. "Free-on-board sales," "carloads f. o. b. usual terms," "carloads f. o. b. cash track," and "sales on account" are other methods of grape marketing which are discussed in the bulletin.

Several pages are given to a description of the seven principal varieties of grapes, namely: Concord, Niagara, Catawba, Delaware, Moore, Worden, and Champion. The leading producing sections, their acreage, varieties, marketing methods, and methods of packing are also described, giving a comprehensive survey of practices obtaining in all the principal grape-producing sections of the North.

The points to which northern grapes are distributed are shown in a table listing the destination and number of car-lot shipments of eastern grapes from each important section. Some 500 receiving cities are listed in this table.

Weekly News Letter

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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MAY INTRODUCE PARASITES AS AID AGAINST CORN BORER

It is possible that parasites which destroy the European corn borer may be brought to the United States to help in controlling this pest. Dr. L. O. Howard, Chief of the Bureau of Entomology, United States Department of Agriculture, has just returned from Europe where he made an extended study of the borer and its enemy parasites in the cornfields of France and Italy. He reports that the corn borer is to be found in nearly every European field, but that its ravages are not severe, probably due to some natural control which checks the insect.

In the United States the European corn borer does considerable damage in some portions of the country. In Massachusetts the damage to the sweet corn in 1919 was estimated to be between 5 and 10 per cent of the crop. It seems evident that there is not, as yet, the natural means of control which evidently does so much to save the European fields from disaster.

The department has been active in the effort to eradicate or control this insect in order to prevent its spread to the great corn-growing belts of the South and Middle West. The insect normally has a wide range, but, though it has been in this country for 10 years, it has been unable to spread far from the original infestation spots.

There is some ground for hope that damage by this pest this year will be less than was sustained last year. The European corn borer differs from all others in that it attacks all portions of the plant, with the exception of the broad leafy parts. Its attack sometimes results in very serious injury to the plant, and it is this phase of feeding activity which makes the insect a dreaded and dangerous enemy.

ALLEGED "APPEAL" MERELY STATEMENT OF FOOD VALUES

A statement that the United States Department of Agriculture had issued "an appeal" to American housewives to take advantage of the War Department's sale of canned meats was included in a press release from the office of the Director of Sales of the War Department issued August 27. Nothing in the nature of an "appeal" has been issued by the Department of Agriculture. The department merely furnished the War Department, at the latter's request, with data in regard to the nutritive value of corned beef, with the understanding that the War Department desired to use the information merely as a basis for advertising its canned products.

The following statement, correcting the former release, has been made by the Office of the Director of Sales, War Department:

"Editors are requested to correct a statement made in a press release of this department issued August 27, in which it was said that the Department of Agriculture had issued an appeal to American housewives to take advantage of the War Department's sale of canned meats. The press release issued by the War Department, which quoted an official of the Department of Agriculture, was based upon a memorandum of information about the comparative value of canned and fresh meats furnished by that official on request of the Director of Sales. No public statement or appeal on this subject has been made by the Department of Agriculture."

FAVORS STANDARD CONTAINERS TO END MARKETING CONFUSION

To eliminate the confusion and dissatisfaction now existing over the use of a multitude of containers of different shapes and sizes in the marketing of fruits and vegetables, marketing specialists of the Bureau of Markets, United States Department of Agriculture, say that the establishment of a universal unit of measurement is necessary.

The unit of bushel measurement recommended is the stricken, or Winchester, bushel of 2,150.42 cubic inches. With this container there is no difficulty in determining whether the measure is short, as it is required to be level full. It is a unit of sufficient size to permit the buyer readily to distinguish the multiples that are practicable for use in the sale and shipment of fruits and vegetables, and in the opinion of the bureau's specialists the establishment of this unit of measurement for containers for fruits and vegetables sold by volume would constitute an important step toward formulating a consistent policy of standardization that could be applied to practically all types of packages.

The bureau's specialists also believe that all weight per bushel laws relating to fruits and vegetables should be repealed for the reason that there is no definite relation between dry measure and weight. For example, a basket that contains 50 pounds of small apples may not hold more than 45 pounds of large ones. Containers are used interchangeably, and a box constructed to hold 50 pounds of apples becomes a 25-pound box when filled with snap beans.

SHOULD GROW HAIRY VETCH MORE WIDELY FOR FORAGE

Hairy vetch thrives in nearly all soils and climates, is probably as widely distributed as any other leguminous forage crop, and is used for nearly every purpose for which forage crops are employed. It is remarkable for its ability to grow on poor soil, to resist cold, drought, and alkali, and for its comparative immunity from insects and diseases.

Despite all these advantages, hairy vetch is not one of the major forage crops. The acreage is far below that of several others of less value. Forage specialists of the United States Department of Agriculture say that this crop could be profitably grown on a great many more farms.

Hairy vetch, with all its excellent qualities, is not without some objectionable features. Perhaps the most serious is that it will not stand upright without support. As a hay crop, therefore, it must be planted with rye or some other stiff-stalked crop. There is sometimes difficulty in getting a stand and on the other hand in exterminating it when it is once established.

The high cost of seeding has been perhaps the principal factor in preventing its general use. Specialists hold out no hope for cheap seed, but they assert that the advantages of the crop are sufficient to justify its planting even at high cost. This is particularly true, they say, in the States bordering on the Great Lakes and in most of the Atlantic and Gulf coast States.

The subject of seed production in various localities is discussed in detail in Department Bulletin 876, copies of which are available to interested persons, free on application.

May Give Up Sugar Crop If Price Drops—Coconut Likely Successor in Virgin Islands

Some of the conditions and possibilities of agriculture in the Virgin Islands, the most recently acquired possession of the United States, are discussed in a recent report of the insular experiment station at St. Croix, which is the first since this station, originally established by the Danish Government, passed under the control of the United States Department of Agriculture January 1, 1919, and was enlarged to cover the three islands, St. Croix, St. Thomas, and St. John.

May Give Up Sugar.

Sugar, rum—made from cane juice—cotton, and cattle have been the most important products of St. Croix, which is the largest and best developed agriculturally of the islands. Approximately one-fourth of the area of St. Croix, something over 13,000 acres, is in cultivation, practically all of it in sugar cane, but, as pointed out in the report, if the price of sugar declines to any considerable extent or the present scarcity of efficient and dependable labor continues, the sugar planters may have to turn their attention to other crops. One of these which can be grown successfully on any of the sugar plantations is the coconut The station has shown that coconuts may be so interplanted with cane as to gradually replace the latter without interrupting the income from the plantations.

The climate and soil of St. Croix are well suited to the raising of sea-island cotton, and cotton growing has been a successful industry in the past, but only a small area is at present devoted to it, due to the fact that the prevailing high prices for sugar and the uncertainty of the future of sea-island cotton has caused most of the cotton planters to abandon its cultivation. The few, however, who have continued to grow cotton have been rewarded by handsome returns.

As a result of the scarcity of labor, live-stock raising is becoming more and more popular on the island of St. Croix and, it is believed, may also be profitably developed in other islands of the group, particularly St. Thomas, where the larger part of the lands are too hilly for any kind of agriculture requiring implemental tillage. Until recently there was practically no inducement to increase the number of stock raised on the islands because the opportunity to export animals was very small. The war, however, developed an export market in Porto Rico which seems likely to continue. In addition to cattle, horses, mules, sheep, and hogs are raised, some of these animals being available for export.

Drawback to Stock Raising.

A serious drawback to stock raising is the shortage of suitable feed during the dry months of the year, but it is thought that this can be readily overcome by the use of silage. An effort is therefore being made to encourage the erection of silos and the production of silage from various native forage plants which can be grown in abundance even on the hilly lands.

The experiment station has developed useful varieties of sugar cane and is also doing important work with cotton, corn, and leguminous crops, as well as with coconuts, citrus fruits, papayas, sweet potatoes, and grasses and other forage plants.

WOMAN'S EFFORTS BRING SHADE TO TREELESS TOWN

This year Freedom, Wyo., is enjoying the novelty of shade trees along its streets and on its lawns because one of its woman residents had vision enough to see trees there and determination enough to get them planted. This public-spirited individual set as her goal 250 trees in Freedom in six months, but so popular did the movement become that June 1 found 1,460 trees planted.

Freedom is located in the treeless portion of Wyoming. No native trees grow there, and up to this year none had been imported. The shadeless streets and lawns were unquestionably in need of trees, both for comfort and beauty, but as nothing was done about it they remained treeless. Last year the woman who decided that Freedom had gone treeless long enough wrote the State home demonstration leader—the local women were not organized into a club—and asked if she could help her start a movement to plant trees in her town. The State leader suggested that she write the forestry division at the State agricultural college and ask what kind of tree would do best in that part of the State. She was advised that blue spruce did very well there and that the division would be glad to furnish them to the town for 4 or 5 cents apiece.

The price was so nominal and the desire for trees so strong among Freedom residents that once an opportunity was given to acquire them with little effort everyone wanted trees, and the result was 1,460 planted in the town in six months. The whole county is now taking up the idea and blue spruces are being planted everywhere.

STEADY DEMAND MAY ASSURE PRODUCTION OF CORN OIL

Corn oil appears to have established itself as a satisfactory product for which there will be a steady demand, according to Department Bulletin 904 recently issued by the United States Department of Agriculture. That the oil can always be produced seems assured by the fact that it is a by-product of the manufacture of certain staple corn products, and it is only in case of an overproduction of fats and oils that it might be discontinued and the germs disposed of as feed. Such a situation seems improbable, however, and at the most would doubtless be only temporary.

As to the utilization of corn oil, it is believed that within a few years the oil will be used almost entirely for edible purposes, except only what is of such poor quality as to make its refining unprofitable. The sale of the oil in retail packages will very likely be further developed, and its use by bakers is also likely to increase.

The amount of corn oil used for edible purposes in the future will be determined by the quantity available rather than by any question as to its utility. At present some bakers, while admitting that it is suitable for their products, use cottonseed oil because the supply of corn oil fluctuates so that it is not always obtainable in sufficient quantities.

PUREBRED REPLACES SCRUB BULL.

"I disposed of one scrub bull and five cows that were not profitable." With this explanation a live-stock owner in Dodge County, Nebr., enrolled in the "Better Sires—Better Stock" movement which provides for purebred sires in all classes of domestic animals kept.

A purebred Holstein bull now heads his herd of 25 grade cattle and the Duroc swine on the farm are all purebred. Horses, sheep, goats, and poultry complete the kinds of live stock kept. While these are not purebred, they will be improved by breeding to purebred sires only.

The experience of live-stock owners that scrub sires are unprofitable supports the results of numerous official experiments which show the superiority of good purebred sires over all other kinds.

Find New Infestations of Potato Wart In Five Western Pennsylvania Towns

New infestations of potato wart are being found in western Pennsylvania this year. During the present season the disease has been found at Woodvale, Robertsdale, Yatesboro, Beaverdale, and Smithmill. Three of the discoveries were made by survey men of the United States Department of Agriculture and two by men from the Pennsylvania State Department of Agriculture at Harrisburg. Both agencies are working in cooperation for the detection and eradication of the disease.

Seven Gardens Infested.

In Robertsdale seven gardens were found infested, some of them badly so, 50 to 90 per cent of the plants being affected in some cases. So severe was the disease last year that one gardener abandoned growing potatoes. The disease has been present in Robertsdale for several years, as is shown by the prevalence of the disease, and the reports of persons raising potatoes there. Efforts to trace the seed of the diseased plants led to the information that foreign seed had been imported in 1912. It is thought probable that the infection came from these foreign potatoes.

State authorities are reluctant, it is said, to place a local quarantine upon the infested places immediately, although this will be done if further spread of the disease appears likely. For the present they will seek the voluntary cooperation of growers in taking the necessary precautions to prevent further dissemination of the wart organism. Gardens will be closely watched and whenever quarantines appear at all necessary they will be imposed.

A number of new infestations have also been found at Thomas, W. Va., and another village, Coketon, about 1 mile from Thomas, has been added to the list of localities where wart occurs. Some of the new infestations are said to be rather heavy according to a recent report from the Federal agent there.

FALL ARMY WORM INVADING NORTH BY WAY OF VIRGINIA

The Bureau of Entomology of the United States Department of Agriculture reports that an invasion of the fall army worm is working northward from South Carolina and has been found in eastern Virginia. It is quite probable, say the experts, that the pest will continue its progress northward throughout the fall. The last severe outbreak of the worm was in 1912, when the damage done to cotton crops was enormous. The worm does not confine its attacks to cotton. It is a voracious feeder, and will destroy corn, grasses, sorghum, rice, oats, millet, and will sometimes attack cultivated crops such as the sweet potato, turnip, spinach, tobacco, tomato, cucumber, and grape. During the 1912 infestation many people reported great damage to lawn grasses by reason of the worm's insatiable appetite.

When the worms are observed to be feeding on the grasses they should be sprayed immediately with a solution of powdered arsenate of lead, 1 pound, or arsenite of zinc, 1 pound, to 50 gallons of water, in order to kill them before they can attack the corn and more valuable crops, which they will do as soon as they have destroyed the preferred grasses.

The Department of Agriculture does not anticipate that the present invasion will reach the disastrous proportions of the 1912 invasion, but it does advise that the bare striped caterpillar be watched and check measures taken wherever it appears. A delay of 24 hours in applying control may result in the destruction of a valuable crop, or it may ruin a lawn.

CLUB GIRL CONDUCTS CANNING DEMONSTRATION IN STORE

Conducting a canning school for a month or six weeks in a large grocery store in Boise, is the experience this summer of a Canyon County, Idaho, canning club girl, namely, Miss Theresa Lenaghen.

A representative of a large glass manufacturing company desiring to establish a canning school in Boise, looked about for an experienced person to conduct this school. Knowing of the work of farm bureau junior canning clubs and being interested in this work, the representative secured the names of several members of canning teams and from these chose the name of Miss Lenaghen, who consented to take charge of the work.

Miss Lenghen has been a member of canning teams since 1917, being a member of the Canyon County champion team for two years and was also captain of the State champion canning team of 1918, which went to Spokane and won second place in the interstate canning demonstration contest. Garbed in an appropriate white uniform and cap, Miss Lenaghen is busy from 9 to 12 o'clock in the morning and from 1.30 to 4.30 each afternoon.

That a large concern should turn to canning club members to conduct these important schools is a matter of great satisfaction to all connected with extension work and no small credit to canning club members in general.

All members of the boys' and girls' clubs organized by the United States Department of Agriculture and the State colleges are taught how to demonstrate what they have learned, for their leaders regard it to be of as much importance to the boys and girls to be able to teach others well as it is to learn how to do it themselves.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended September 11:

Home Laundering. Farmers' Bulletin 1099.

Alfalfa. Department Circular 127.

Fall-sown Oats. Farmers' Bulletin 1119.

Aphids Injurious to Orchard Fruits, etc. Farmers' Bulletin 1128.

Spillways for Reservoirs and Canals. (Professional Paper.) Department Bulletin 831.

Organization of Cooperative Grain Elevator Companies. Department Bulletin 860.

Castor-oil Industry. (Professional Paper.) Department Bulletin 867.

The Flow of Water in Drain Tile. (Professional Paper.) Department Bulletin 854.

Mountain Outings on the Rainier National Forest. Department Circular 103.

Fishing, Hunting, and Camping on the Cascade National Forest. Department Circular 104.

Directory of Game Officials, 1920. Department Circular 131.

United States Grades for Milled Rice. Department Circular 133.

Value of Government Crops Reports. Department Circular 152.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 1099; Department Bulletin 831; Department Circular 103.

Believes There is Money in Farming—Massachusetts Boy Decides to "Stick"

Thomas Chisholm, of Weymouth, Mass., is a farm boy who believes that there is money in farming and that it is about the best profession a boy can select. He believes there is money in it because he is making it.

Thomas belongs to one of the boys' and girls' calf clubs organized by the United States Department of Agriculture and the State agricultural college, but he was in the dairying business when he was but 7 years old—long before there was a club organized in his locality. At that age his father had a chance to sell one of his cows for a large sum. As he wanted the blood to remain in the herd he gave Thomas her calf to bring up by hand, and he did it so successfully that as a 2-year-old she gave 34 pounds a day and was a steady milker. He owned this cow for six years.

One of Its First Members.

The first boys' and girls' calf clubs in Massachusetts was organized in Weymouth, and Thomas was one of its first members. This year he is president of the club. Last year he was one of the team of three that won first place and the right to represent the Massachusetts calf-club work at the Eastern States Exposition in Springfield, Mass. The Massachusetts team won first place in the contest at Springfield.

Thomas also entered a judging contest at the same exposition and won third place. His prize was a purebred Guernsey calf, which he has added to the farm herd. In the Chisholm family all the live stock does not belong to father. Father believes if you want a boy to be interested in the old place you must give him a share in its returns as well as its work, and father practices what he believes.

Manages Father's Herd.

The following extract is from a report Thomas made his club leader recently:

"We have at home now 22 head of cows, and I am managing the herd for my father on a 50-50 basis. Besides this I own personally a purebred registered Holstein Friesian bull and a registered heifer of the same breed. These are the cattle with which I entered the calf club. I like this breed and think it is the most profitable producing breed on earth today. I have one grade cow in the herd that produced 10,500 pounds of 4 per cent milk in 300 days, which isn't so bad. Ours is the dairy business.

"I know a great many farmers are going out of business; there is the labor crisis and feed is high, but the fellow that can stick to the job is going to be the lucky one.

"It takes a good long day to do the work of the dairy. That is one reason why I am not just now in school, but I have had two years in the agricultural high school and I am still working under the teacher of that school."

BOTTLE BREAKAGE INCREASES COST OF MILK TO CONSUMER

In 72 cities milk dealers used each other's bottles indiscriminately. In at least 27 cities the junk dealers carried on a regular traffic in milk bottles. Thirty-three cities operated milk-bottle exchanges, according to figures obtained by the Bureau of Animal Industry, United States Department of Agriculture. The bureau cooperated with various trade journals and with the dairymen themselves in collecting these figures.

How much the loss of milk bottles affects the price the milk user pays the dealer can be estimated from the figures, which show that the dealers are compelled to purchase 1.2 bottles every month for each bottle they have filled daily during that period.

The loss among small dealers is less than that sustained by the large enterprises. The small dealers have greater breakage than the large distributers, but they are better able to check up on the return of their bottles and therefore do not lose so many in that manner. Breaking bottles, losing or using them for other purposes, selling to junk dealers, or giving the bottles belonging to one dealer to another adds materially to the consumer's bill and is an economic error which each and every consumer can help to reduce by returning every bottle in good condition.

TO PREVENT PINK OYSTERS.

Measures to prevent contamination of oysters in and about oyster houses will stop the trouble periodically experienced by shippers when a pink color develops in the liquor or in the oysters themselves. This conclusion has been reached through several years of investigation by the Bureau of Chemistry, United States Department of Agriculture, and by an investigator at Brown University.

It is recommended that all bins, benches, tubs, and other equipment with which oysters come in contact be scrubbed thoroughly with water and then washed with a 0.04 per cent solution of formaldehyde gas, which is equivalent to one part for formaldehyde to 2,500 parts of water. The solution may be made by adding one part of commercial formalin to 1,000 parts of water. The washing should be done in the fall before any oysters are brought to the opening house, and should be repeated several times during the winter. Care should be taken that no formaldehyde remains on any of the utensils with which the oysters come in contact, since it might get in the oysters and render them injurious to health. Thorough washing in clean water will remove the formaldehyde.

The cause of the pink color is a yeast-like fungus which grows readily at low temperatures, the investigations have shown.

TRIP TO ENGLISH STOCK SHOW PRIZE OFFERED CLUB BOYS

Fifteen States have already entered teams of club boys in the International Club judging contest to be held at the Southeastern Fair at Atlanta, Ga., October 19 to 22. Other States are making arrangements to do likewise. The goal set before the boys and their leaders is a trip to England to the Royal Stock Show. The lucky boys will be those composing the team scoring highest, and the boy making the highest individual record. The Southeastern Fair Association will also pay the expenses of the State club leader represented by the winning team, the county agent represented by club member making highest score, and one Washington office club official, whose territory is represented by the winning team.

Trips to Washington and to nearby points of interest have been prizes for which club boys and girls have often contended in the past, but this is the first time that a foreign trip has been offered as a prize to those doing work in the clubs which are organized by the United States Department of Agriculture and the State colleges.

In addition to the trip to the Royal Stock Show and to some of the big English stock farms, the Guernsey, Hereford, Shorthorn, Belted Hampshire, and Duroc Jersey breeder associations are each offering prizes of $100 to the teams making the highest score in judging. Twelve breeds of live stock are to be judged by the boys at Atlanta.

COTTON GROWERS MUST RECEIVE FAIR PRICES, SAYS SECRETARY

(*Continued from page 1.*)

market. The prospect for the new crop, according to the latest estimate of the Bureau of Crop Estimates, is about twelve and three-quarters million bales. It appears, therefore, that on this basis the supply of American cotton for this year will be about fifteen and three-quarters million bales, whereas the world's consumption of American cotton, using last year's consumption as a basis, will probably not exceed 13,000,000 bales.

"One who considers only the foregoing statistics may, however, be misled as to the true market situation. It is the general belief that the existing surplus in the United States of American-grown cotton is largely composed of very low grades which have been accumulated from several crops and for which there has been almost no market. Even if the mills should to some extent turn to this low-grade cotton for a source of supply, as we are informed some of them are doing, the quantity of goods produced therefrom will be less than from the higher grades, because of the greater percentage of waste in spinning, so that the presence of a surplus of a certain number of million bales of low-grade cotton does not mean as much in terms of goods as if that surplus were composed of high-grade cotton. While for the time being the existence of this surplus exercises a depressing effect upon the whole market, the experts of the Bureau of Markets suggest that there is likely to be a good demand for new-crop cotton when it has begun to move because of the ability of purchasers to get the higher grades, which the present surplus does not contain.

"While in the case of some countries the consumption of American cotton has returned to about the prewar normal, Germany and Austria in particular have fallen far short of taking as much as they did prior to the war. Therefore, in this direction there would seem to be the greatest possibility for increasing the takings of American cotton over those of last year. Germany especially was formerly a large consumer of low-grade cotton and it is generally believed that the curtailment of German takings of American cotton is largely responsible for the accumulation of low grades in the stocks in this country.

A Fair Price Necessary.

"It is absolutely essential to the continued production of American cotton that the cotton farmer receive a price for his cotton which will meet his legitimate expenses and return a reasonable profit. Of course, the production of cotton should be placed upon the most economical basis in order that it may meet foreign competition and justify the price necessary to return a reasonable profit to the farmer. Whenever the market price of cotton recedes to a point dangerously close to the cost of production, or falls below that cost, it of course becomes increasingly important for cotton growers to produce at home, so far as possible, the food and feed crops, such as corn, oats, hay, legumes, and live stock, which the maintenance of their operations requires. As you know, this is in fact the practice which this department has steadily advocated in recent years as the only safe foundation for southern agriculture. Diversified cropping is essential to economical production of cotton and much safer than single crop agriculture of any character.

"Of course, in view of the world-wide consumption of American cotton there are factors which enter into the determination of price quotations over which no control can be exercised. For example, recently there came a report of an unexpected financial panic in Japan, rumors of the outbreak anew of general war in Europe, curtailment of purchases by buyers of manufactured products, and increased estimates of this year's yield of cotton which played their part in fluctuations in the cotton market regardless of actual current movement. The insufficiency of timely, authentic information on all phases of the world's cotton industry makes it difficult even to discuss the situation satisfactorily, and consequently attempts to devise remedies are of uncertain value.

Timely Marketing Important.

"Producers of cotton should remember, however, that although the bulk of the crop usually comes to market in four or five of the fall and winter months, the consumption of cotton extends over a period of twelve months. On account of the lack of suitable warehouses, the receipts of which would be easily negotiable, the producers have not been able to finance the marketing of their product in orderly fashion, according to the needs of consumption. To remedy this situation, there must be adequate facilities available for storing the crop and there must be means for financing the producers until the cotton is sold. One of the most important ways of obtaining these advantages for the producers is through properly organized and directed cooperative effort which involves unity of action among producers similarly situated. By cooperation producers may make their offerings more attractive to buyers by improving the handling of their cotton, grading it properly, and having it stored and adequately protected in suitable warehouses. In these and other ways and by informing themselves as to the true market conditions, producers may secure advantages which will enable them to deal on a footing of equality with the buyers of their cotton. This department has consistently advocated such cooperation among farmers wherever it seems feasible and desirable. In a number of States this department is already demonstrating to farmers' associations the advantages of producing better varieties, of more care in handling, of correct grading, and of the use of proper marketing methods. At the same time this department maintains a cotton-quotation service for the purpose of giving farmers market information upon which they can rely. In addition, under the United States warehouse act, this department is giving to producers the assurance of safe storage facilities for their cotton and making it possible for them to obtain warehouse receipts which should be readily and widely negotiable as security for loans. In these and other ways this department is endeavoring to aid southern cotton producers to market their cotton more advantageously than heretofore. It is thought that through cooperation they may obtain greater benefits from these activities than if they continue to operate individually.

"I may add that the question of better banking facilities for handling this year's crop was taken up recently with Gov. Harding, of the Federal Reserve Board, and for your information copies of the correspondence are inclosed.

"If there is any further information that this department can furnish you, I shall appreciate it if you will let me know."

RATIO OF SIRES AND DAMS.

Developments in the "Better Sires—Better Stock" campaign have resulted in figures showing the relative number of males and females kept for breeding purposes. Following are the ratios based on more than 200,000 head of stock of all kinds listed with the United States Department of Agriculture:

Cattle	1 bull to 18.9 cows.
Horses	1 stallion to 16.9 mares.
Swine	1 boar to 11.5 sows.
Sheep	1 ram to 37 ewes.
Goats	1 buck to 26.6 does.
Poultry	1 rooster to 23.3 hens.
Other poultry, geese, ducks, turkeys, etc. (average)	1 male to 8.5 females.

These figures represent conditions on more than 2,000 farms in various parts of the country and are believed to be typical of other farms. They show the importance of placing stress on quality in sires, since in practically all cases a sire is the parent of a very much larger number of offspring than the average female animal.

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SMALL IMPORTATION OF TEA DUE TO ACCUMULATED SUPPLY

Supervising Tea Examiner Explains Why Import Reached Low Level.

During the War Large Importations Were Made Through Fear That Embargo Would Be Placed Upon Tea—No Indication Less Tea Is Consumed.

The reduction in the quantity of tea imported into the United States this year is not due to a falling off in the consumption of tea, as has been erroneously reported, says George F. Mitchell, supervising tea examiner of the Bureau of Chemistry, United States Department of Agriculture, but to the surplus supply brought in during the war and to the high cost in the tea-producing countries. The quantity imported during the fiscal year ending June 30, 1920, was less than the amount brought in during each of the three preceding fiscal years, but was slightly more than the normal annual importations before the war. The degree of purity of the tea imported during the last year was the highest on record.

The large importations during the war were due, according to Mr. Mitchell, to the fear on the part of the tea importers that an embargo would be placed on the importation of tea in order to conserve shipping space, or that a duty would be placed on it to raise war revenue. The likelihood of either or both of these factors entering the situation induced the importer to bring in large quantities of tea while it was possible to do so without the payment of duty. A surplus supply of tea was thus accumulated.

Cost of Tea Higher.

The high cost of exchange in many of the tea-producing countries, together with increased costs for labor, and a shortage of the crop in some countries, has greatly increased the price that importers have to pay for tea. During the last year when large supplies were in the hands of dealers the importers hesitated to bring in additional tea at a higher price than would probably have to be paid later. There is no indication, however, that less tea is being consumed now than in former years. It is highly probable in fact that more tea is being consumed since the advent of prohibition than formerly.

The first column of the following table shows how the importations increased

(*Continued on page 7.*)

ADEQUATE STORAGE FOR COTTON NEEDED.

Edwin T. Meredith, Secretary of Agriculture, recently wrote the following letter to W. W. Long, director extension service, Clemson Agricultural College, South Carolina:

"I have received and read with great pleasure your letter regarding the campaign for the construction of cotton warehouses and the appointment of cotton classers under the agreement recently entered into with this department, and am pleased with the success you appear to have had in creating interest in both lines of activity.

"As you already know, this department is anxious that everything possible shall be done to impress farmers with the need for the adoption of the best methods of handling and marketing their cotton so that they can get as nearly as possible the full market value of every pound of cotton they produce. As one of the means to this end, they should have adequate and satisfactory facilities for storing their product and of financing it while in storage, so that it may be protected from weather damage and marketed gradually in accordance with consumption needs. Wherever such facilities are not at hand or are not sufficient, the farmers should cooperate to secure them. When they have secured the necessary warehouse facilities, they should not only see that the warehouses in which they store their cotton are conducted strictly in accordance with the laws of the State but they will find it distinctly to their advantage to have such warehouses licensed and bonded under the United States warehouse act, so as to invest their warehouse receipts with the highest degree of security and negotiability. The failure of farmers to avail themselves properly of the advantages to be gained through safe storage for their cotton is undoubtedly costing them many millions of dollars annually through country damage, inadequate and expensive financing, and otherwise.

"I shall be glad to be advised from time to time of the progress of your campaign."

REPORTS COST OF PRODUCING CORN-FED NEBRASKA CATTLE

Inquiry Conducted by Department of Agriculture and State Agents.

Indicates That During Past Two Years Cattle Feeding in Districts Covered Was a Precarious Venture—More Likely to Be Unprofitable Than Not.

According to cost of production investigations conducted by the United States Department of Agriculture in cooperation with the University of Nebraska, in parts of Nebraska during the past two years the average cost of corn-fed cattle laid down at market was $14.91 per hundredweight for 2,293 head fed in the winter of 1918–19, $13.83 for 3,041 cattle in a survey study during the winter of 1919–20, an average of $13.39 for an additional 795 cattle upon which detailed cost figures were secured during the same winter. The costs upon some droves were found to vary widely from these average figures, with the major portion going to market the first winter (1918–19) carrying an expense bill of from $13 to $18 a hundredweight, while in 1919–20 the costs o fmost of the cattle were between $11 and $17. The facts thus far brought out by the investigation would indicate that during the past two years, in the district covered by the survey, cattle feeding was a precarious venture, more likely to be unprofitable than not. There was an average loss per head of $3.17 on the cattle for which records were obtained in 1918–19, and of $10.69 and $14.57 on two groups for which records were obtained in 1919–20. These

figures are the results of the first two years' work of a five-year study of the basic factors of the cost of fattening cattle, which is being conducted in Nebraska by the Office of Farm Management and Farm Economics, in cooperation with the University of Nebraska and the Bureau of Animal Industry, United States Department of Agriculture. Similar studies are being conducted in Iowa, Missouri, Illinois, and Indiana, and preliminary reports on the work in these States will be forthcoming shortly.

Feeding Plays Minor Part.

The greater part of the Nebraska cattle covered in the survey work of 1918–19 made their gains at a cost of from 20 to 35 cents per pound, with extremes ranging from 12 to 48 cents, while of the cattle covered the next year the greater part made their gains at from 15 to 35 cents per pound, with an extreme range of from 8 to 53 cents. While economical feeding is shown to be the major factor in the cost of fattening after the steer is bought, the investigation substantiates the fact that feeding usually plays a minor part in determining profit or loss, and that buying right and selling right are more often the controlling factors.

The cattle in question were bought at about the same figures in both years of the investigation. In 1918–19 three of the droves were bought at between $6 and $7, but most of the cattle covered in the study went into the lot at between $8 and $12. Of the 21 droves covered by the detailed cost-accounting method, 11 cost between $10 and $11. The weight of the feeders varied rather widely, averaging about 750 pounds, with but few over 1,000 pounds or under 500.

Feed, the most important factor of the cost of fattening the steer after purchase, was found to constitute from 75 to 90 per cent of all the expense involved in handling the steers after being put on feed. In a great number of cases the feed charges ran from 85 to 90 per cent of the operating expenses. The cost of man labor and horse labor constituted from 7 to 8 per cent.

Variation in Cost Factors.

The wide variation in the factors affecting cost was reflected in equally wide variation in the total cost of the finished cattle. During both of the years of the study the cost of the cattle covered in the surveys ranged from about $8 to $22 per hundred when fattened, the average for 1918–19 being $14.91, and for 1919–20, $13.83. The droves covered by the cost-accounting method showed a much narrower range, from $10 to $18, with an average of $13.39. In the final computation of net cost, allowance was made for pork and manure, two by-products of the feeding business which are credited to the steer. Under the conditions that prevailed where this study was made, these credits covered on the average slightly more than all expenses of fattening, other than feed. Hogs can not be expected to make such a good showing, however, if ground corn is fed to the steers, or if the ration is one in which corn does not have a major place. The financial return varied widely, ranging from $50 profit or more per head, reported for 40 head in 1918–19, to $50 or more per head loss, reported for 155 head in 1918–19, and for over 200 head in 1919–20. As has been stated above, on the average there was a loss incurred in handling cattle each year, reaching $14.57 per head as the average loss of the 795 cattle on the detailed route in 1919–20. However, a number of farmers carried their cattle through with profit.

How Many Forest Fires Due to Smokers? Forest Service Gathering Information

As a basis for securing, if possible, cooperation of tobacco users in the reduction of losses from forest fires, the Forest Service of the United States Department of Agriculture is preparing to gather information as to the extent to which fires in the woods are due to smokers.

"We have been gathering statistics for a number of years as to the causes of forest fires," said Acting Forester Sherman recently in outlining the plan, "but these statistics have not shown under a separate heading fires known to have their origin in tobacco smoking. All fires started by hunters and fishermen, for example, are commonly classed as campers' fires; those started by loggers, to lumbermen; and so on. From now on our men in the field making reports will be asked to indicate, so far as they are able, how many fires are started by smokers. Undoubtedly the general use of cigarettes has tended to make the task of forest protection more difficult. In the days when woodsmen and manual laborers usually smoked pipes the danger from smoking was relatively small.

Seems a Small Matter.

"A burning cigarette end seems such a small matter that relatively few people trouble to be sure that it is out before tossing it away. In the western national forests, where in the summer every spark of fire is particularly dangerous on account of the dryness of the vegetation, our forest rangers have again and again traced fires back to the point of origin and found there a cigarette butt, from which the fire had spread fan-wise down the wind. Some of these cigarette butts lay by the roadside where they had been tossed from the cars of automobilists.

"Lumber companies sometimes forbid smoking in the woods. Restrictive measures of this character would not be called for if smokers had a sufficiently keen sense of responsibility, and the habit of care not to drop fire in any form."

It is not merely in the forests, according to the Department of Agriculture, that smoking is the cause of special fire risk. The Bureau of Chemistry of the department has in recent years been studying the dust explosions which are often the cause of very great losses of property in grain elevators, flour mills, etc., and finds many blazes due to smoking. The educational campaign conducted by the Bureau in the effort to lessen fire losses from this cause has had for one of its important lines of effort bringing home to the ubiquitous smoker in grain elevators, flour mills, etc., the urgent need for care.

Aid of Tobacco Manufacturers Sought.

The Secretary of Agriculture addressed a letter to a number of leading tobacco manufacturers not long ago, pointing out that smokers cause many forest fires, that a single fire may cost the Government thousands of dollars for fire fighting, to say nothing of the timber burned up and the landscape desolated, and that by enclosing in tobacco packages some sort of warning against carelessness with fire, the companies could materially aid in the campaign for forest protection. While most of the companies thus addressed made no reply, one of the largest tobacco companies in the country answered favorably and requested a suggestion for a slip which might be placed in packages of smoking tobacco, as a warning. The department suggested a legend reading:

> CARELESS SMOKERS CAUSE MANY FOREST FIRES,
> says the United States Forest Service.
>
> BURNED TIMBER PAYS NO WAGES!
>
> _____ asks your help to prevent fires.
>
> Be sure your match, pipe ashes, cigarette are out before you let them fall.

COMMUNITY EFFORT BRINGS DAIRYMEN BETTER PRICES

Success of Grove City (Pa.) Creamery Shows What Can Be Accomplished.

More Than Half a Million Dollars New Wealth Created Last Year Through Its Creamery Project—Same Plan Adaptable for Other Lines of Agriculture.

More than half a million dollars of new wealth created in one year by a single community—that is the record of Grove City, Pa., a whole community largely given over to dairying. There are many cities and towns throughout the country engaged in the production of some one principal commodity. Miners increase the value of coal by taking it from the ground. Manufacturers add to the value of raw materials by shaping them into marketable products. These increase wealth. But Grove City actually creates new wealth. It takes the air, sunshine, and water—elements free to all—and converts them into gold—dairy products.

What the Grove City community is doing can be done by any community that is satisfactorily situated and that has a well-equipped, well-managed creamery. The fact that the management is supervised by the United States Department of Agriculture probably gives it no appreciable financial advantage, because the relationship is investigational and has not reduced the cost of manufacture below that possible in many other creameries. The products are always sold on their merits, and the name of the department is not used to advertise them.

Community Spirit Built Up.

The success of the Grove City creamery is due largely to the admirable community spirit that has been built up there and in the surrounding district. That this spirit exists to-day is due largely to the efforts put forth by the business men of Grove City, especially the members of the Commercial Club, an organization that is open to the farmers of the neighborhood who are interested in the advancement of dairying. From the very outset of the undertaking, in 1914, the business men took an active interest in the creamery and in the movement toward general agricultural development through dairying, and by their enthusiasm they aroused the interest of the farmers.

The business men of Grove City took the first step, the farmers met them halfway, and all are now working for a common cause, which is the building up of a successful dairy community. Though the business men began the work for the public good and with little thought of personal gain, they have found that it is paying them well, because better farming has brought them better business.

The records of the creamery show a remarkable increase in income derived from the sale of its products. For the first year, from July 1, 1915, to June 30, 1916, the gross income was $82,432; the second year it increased to $212,904; the third year, to $375,596; and last year the gross income totaled $505,810. As only a small part of the money was used to pay the cost of operation, nearly all of it was distributed among the farmers around Grove City. Since much of the income was due to increased and improved farm business, a large part of it may fairly be considered as newly created wealth.

Improved Dairy Cows.

The most direct cause of the greatly increased prosperity of the Grove City community is the more profitable dairy cow. Dairying in the Grove City district has been much improved by the purebred cattle that have been shipped in, but it has been improved more by the scrub cattle that have been shipped out. The cow-testing association, which has taken the guesswork out of dairying in that district, is an organization of the dairy farmers who employ a tester to test their cows for production and to keep feed and production records.

Tuberculin tests from April, 1918, to May, 1920, were made on 387 herds, consisting of 4,988 animals, under the accredited-herd plan. Of these, 148 herds are already accredited. According to latest figures, 250 farmers in the vicinity of Grove City own one or more purebred dairy animals. The importation of purebreds is going forward steadily.

The creamery has gained a reputation for high quality of products. This has brought a ready market at satisfactory prices, which have encouraged larger production. Increased production and satisfactory prices have made the farmers more prosperous. Increased financial prosperity, however, is only a small part of the gain that has come to the community. Better schools, better churches, better homes, and better social conditions are coming as a result of this, because the people have learned to work together without friction.

To achieve such success as that at Grove City, it is not necessary for a community to engage in the manufacture of dairy products. The Grove City plan can be adapted as well to any other type of agriculture. To make the work a success, however, the community must cast aside all selfishness, pull together, and organize, and should select for its field agent a man of personality, education, ability, and diplomacy. He should be thoroughly trained in scientific and practical agriculture and must have had wide experience. With such a man in charge and with a modern creamery there is every reason to believe that any community, with the spirit of cooperation and even fair agricultural resources, can do what the Grove City community has done.

FIND MANY POTATOES FREEZE DUE TO IMPROPER SHIPPING

Of 5,895 cars of potatoes inspected by agents of the Bureau of Markets, United States Department of Agriculture, during the year ended July 1, 1920, more than 2,000 cars showed damage from freezing in transit amounting in some cases to 40 per cent. This loss would not have occurred with the use of proper loading and heating methods, say the bureau's specialists.

Protection from cold depends largely upon a constant circulation of warm air around the load. Heated air from a stove in the center of car rises to the top, spreads along the ceiling between the potatoes and the roof, thence down through open spaces at the ends, then back underneath a false floor coming out at the stove.

Cars should be carefully lined with paper. In box cars, false floors, false side and end walls should be constructed of boards and studding so as to provide for air circulation around the load. In refrigerator cars, false floors should be provided and care should be taken that bunker bulkhead openings are not blocked, either in papering or loading.

Cars should be heated at least six hours before loading. In loading, sacks should not come closer than 8 inches from the ceiling. The potatoes at the floor should be loaded not less than 6 inches from the sides and ends of car.

Complete details regarding the prevention of freezing in transit and proper loading methods can be had upon application to the Bureau of Markets, United States Department of Agriculture, Washington, D. C. Ask for Farmers' Bulletin 1091.

ALFALFA IN SOUTHWEST.

The total production of the early crop of alfalfa seed in the southwest will be less than normal, and equal to or slightly greater than last year, according to reports received by the Bureau of Markets, United States Department of Agriculture. Most of the seed will be taken from the second cutting, and general conditions have been favorable for the development of seed of good quality. Very little movement of seed was reported, as thrashing had begun in Arizona only and prices had not been established.

Weekly News Letter

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Harlan Smith, Chief

PRESS SERVICE
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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

ANNOUNCES REORGANIZATION TO AID INFORMATION WORK

Secretary Meredith has announced a reorganization of the publication and information work of the Department of Agriculture, and the appointment of a director of information to have general supervision of all these activities, both in Washington and in the field. He has named E. B. Reid, formerly chief of the Division of Publications, to the new position. Mr. Reid's relation to the work will be similar to that formerly held by Assistant Secretary Ousley, who had charge of such activities during the war period.

Harlan Smith, formerly in charge of the Office of Information, has been appointed chief of the Division of Publications. The work now being performed by the Office of Information hereafter will be known as the Press Service, which will be in charge of Dixon Merritt, and will continue under the immediate direction of the chief of the Division of Publications.

The Director of Information will bring about closer coordination of the information and publication work of the various bureaus with that of the Division of Publications and will be charged with formulating and executing plans for developing and improving the information service of the department as a whole to the public.

HOG-CHOLERA MONTHS AT HAND; SHOULD WATCH HERDS CLOSELY

October and November are the months when the dread disease, hog cholera, is most likely to appear. During those months and until snow covers the ground swine raisers are urged by the United States Department of Agriculture to be especially observing when feeding hogs in the morning. Any animals in the herd which fail to come to their feed, and particularly those having arched backs and rough coats, should be removed promptly from the rest of the herd.

In some cases hogs sick with cholera die within a few days; in others the disease may assume a chronic form and linger for several weeks. If cholera is suspected swine growers should immediately call a competent veterinarian to make a proper diagnosis and to apply the preventive serum treatment if they are found to be affected with cholera. A post-mortem examination of swine that have died from cholera generally will show one or more of the following symptoms: Purple blotches on the skin; blood-colored spots on the surfaces of the lungs and heart, on the kidneys, and on both the outer surface and inner linings of the intestines, stomach, and bladder; reddening of lymphatic glands; enlargement of the spleen, in acute cases; an ulceration of the inner lining of the large intestine.

In the lingering or chronic cases of hog cholera it is usual to find intestinal button-like ulcers on the intestines.

GOVERNMENT FILMS TO SHOW EUROPE AMERICAN FARMING

Better American agricultural methods, as portrayed by motion pictures, are proving of much interest not only in the United States but in many foreign countries, judging from the demand for such films made upon the United States Department of Agriculture. Constant requests for the films, which picturize a wide range of agricultural activities, are being received from many quarters, and the number of sales is increasing rapidly under an arrangement by which the purchaser pays the contract charge of a commercial manufacturer.

Among the buyers is the International Committee of Y. M. C. A's., which recently purchased 200 reels on various subjects for use in Russia, Czechoslovakia, Roumania, Greece, and other European countries. The Argentine Government and the Buenos Aires & Pacific Railway have also shown their estimation for American agricultural methods as applied to Argentina. The Government of the Argentine recently purchased several copies of "Embryology of the Egg" and five copies of "Making the South Tick Free," a subject of much interest in Argentina. The railway, in addition to other previous purchases, recently bought six copies of films for use along its lines to show better farming methods. The Korean Government purchased six copies of films on poultry production. These films and others are being shown in 20 foreign countries. Titles and legends are translated into the language of the country where the films are to be shown.

SURVEY BLANKS AVAILABLE NOW TO LIVE-STOCK WORKERS

To enable county agents and officers of county live-stock organizations to determine the quality of domestic animals in their counties, the United States Department of Agriculture has developed a simple yet comprehensive blank form. Though consisting only of one ordinary-size sheet of paper, it provides for information of varied character, including all the principal classes of live stock and the quality of both males and females with respect to breeding. In the case of purebred sires the blank provides for the separate listing of registered animals and those eligible but not registered.

One of the most necessary steps in live-stock improvement is to have definite information regarding the quality of stock kept in the locality. During the current year, in which the "Better Sires—Better Stock" campaign has gradually developed, the Bureau of Animal Industry has been collecting survey blanks used in various parts of the country. The best features of the different blanks have been combined. Sample copies of the new form may be obtained by addressing the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

BRING MOTH BORER ENEMY FROM CUBA TO COMBAT PEST

The expedition to Cuba, under the direction of the United States Department of Agriculture, for the purpose of introducing to this country enemies of the sugar-cane moth borer has returned after succeeding in sending to the sugar fields of the United States several thousand individuals of the moth-borer parasite, Euzenilliopsis diatraeæ, a very small two-winged fly that, in Cuba, keeps the borer under control. The introduced individuals have been distributed in Louisiana and Texas cane fields. The ultimate success of the effort will depend on whether or not the parasites can succeed in overwintering in the United States, and this fact can not be known until next spring. The expedition consisted of five men, a specialist from the Bureau of Entomology and four other entomologists, whose salaries were paid by the Louisiana sugar-cane growers.

Cautions Farmers to Canvass Needs Well Before Buying Motor Truck for Own Use

A steadily increasing number of shippers are looking toward the motor truck for the solution of their transportation problems. Farmers are included in this category, and it may therefore be well to point out, as the result of actual experience of others, the things they should consider in connection with the use of motor trucks to haul their produce to market.

In very few instances, say experts of the Bureau of Markets, United States Department of Agriculture, is it advisable for a farmer to purchase and operate a motor truck solely for his own needs, as the initial investment, cost of upkeep, and the limited time the truck is likely to be in use make the venture expensive and disproportionate to the convenience secured.

Where trucks are operated by private individuals for profit the owner of the truck usually operates between certain points on a fixed schedule. The farmer assumes no risk. He simply pays whatever the rate for cartage may be, and may find the use of this means of transportation an advantage over the railroad or over hauling his produce to market himself by team. At the same time it has often occurred that when the farmer had learned to depend upon this service, the rates would be raised to a point that the farmer could ill afford to pay, or that another motor-truck operator would enter the field with the result that both operators were compelled to go out of business, leaving the farmer without any truck service at all.

One Successful Venture.

It may be well to consider the basis upon which a farmer may secure motor-truck transportation at a nominal cost and create a service upon which he can place full reliance.

There are several cooperative motor-truck associations in existence of which perhaps The Farmers' Cooperative Co., of Harford County, Md., has had the largest measure of success. The territory served by the association is a very productive agricultural region. Many of the farmers ship milk to Baltimore, some raise truck crops, and others practice general farming.

The association rates on many commodities are decidedly lower than those of the railroad. The members say that the saving of time in marketing their produce is a big advantage, also. For example, when the farmers hauled their produce to market by wagon they had to start out at midnight and did not return home until 9 o'clock the next morning. Now, at least 8 hours of that time is saved for other work.

But while the Harford County Co. has had considerable success, it would not have been possible had the condition not been favorable for the operation of a cooperative motor-truck route. This fact should not be lost sight of; and for the benefit of those contemplating the establishment of cooperative motor-truck associations the following points should receive careful consideration:

Factors to Be Considered.

A careful survey should be made to determine the adequacy of present transportation facilities, the reasonableness of the rates charged, the approximate daily tonnage available for movement in each direction, the character of the roads over which the trucks must be operated, and the general sentiment of the community toward such an association. The distance from market should not be more than 40 miles, and there should be sufficient volume of produce to warrant reasonably constant operation of the trucks throughout the year.

It having been concluded that the cooperative enterprise will be a decided advantage, only men who have demonstrated their business ability in handling their private affairs and who exercise a good influence among the members of the community should be selected as directors. The secretary should be a man with energy, tact, business ability, and a high appreciation of the farmer's interests. The capitalization of the association should be large enough to permit the issuance of enough stock to pay for the trucks in cash, to assure a sufficient amount of cash on hand as working capital, and to have enough unissued stock to provide for future sound extension of the business, as well as a depreciation fund to replace worn-out equipment.

Make Service the Watchword.

The trucks should be selected only after a thorough and unbiased consideration of the various makes. Records of performance, of cost of operation and maintenance, furnished by actual operators of trucks rather than by agents of truck manufacturers, should be carefully considered in the light of present and prospective needs of the association.

In employing operators merit should be the sole consideration. Rates should be based on a careful analysis of complete, adequate, and accurate information regarding costs. Accounting methods should be simple but sufficiently comprehensive to show the exact financial status of the association at all times.

In determining matters of policy the interests of the members as a whole rather than as individuals must be considered. Service must be the watchword. And to make the association a real success, each member must feel that it is his association.

CORN BORER THREATENS CORN BELT FROM CANADA

Grave concern is felt by the United States Department of Agriculture over the discovery of the European corn borer in Canada in an area extending from Niagara Falls to St. Thomas and from 15 miles north of St. Thomas to the Lakes. Efforts to check the spread of the corn borer since its first appearance in the United States have been made, resulting in the quarantining of certain sections of New York, Massachusetts, New Hampshire, and Pennsylvania to keep the pest from making its way to the Corn Belt.

The discovery of the corn borer in Canada now shows the Corn Belt to be threatened from another source. To forestall any possible infestation from this direction, the Bureau of Entomology of the department sent a staff of specialists to Michigan, where they will canvass the situation with local agricultural authorities and devise means for protecting the United States from possible invasion.

The corn borer in Canada is much farther west than any heretofore reported on this continent. The opinion is expressed that it exists even farther westward than present reports from Canada show. The Canadian Government is conducting a survey, and the real extent of the corn borer's presence will not be known until this is completed.

The Canadian corn involved is of the flint variety, which in New England and New York has shown itself to be especially susceptible of injury by this insect.

WORLD COTTON STATISTICS.

The world's production of commercial cotton, exclusive of linters, grown in 1919, as compiled from published reports, documents, and correspondence by the Bureau of the Census, was approximately 20,250,000 bales of 500 pounds net, while the consumption of cotton (exclusive of linters in the United States) for the year ending July 31, 1919, was approximately 15,970,000 bales of 500 pounds net. The total number of producing cotton spindles, both active and idle, is about 150,000,000.

Stem-End Rot Results in Severe Losses—Growers Fail to Treat Melons Properly

Losses in watermelon shipments from Georgia and Florida this year were extremely heavy, according to reports received at the Bureau of Markets of the United States Department of Agriculture through its inspection service. By far the greater part of the wastage was due to stem-end rot, a disease which is subject to control by a simple method of stem disinfection at loading time.

Initial Success of Treatment.

This treatment, first recommended in the four southeastern States in 1919, was fairly well applied in Georgia and Florida that season. At that time the United States Department of Agriculture was able to maintain agents in the field for the purpose of demonstrating the correct method of disinfecting the stems, and the results of the work accomplished were very satisfactory. This year, however, owing to lack of appropriations, it was not possible to keep men in the field for purposes of instruction and research, with the result that progress in preventing losses from this disease has been greatly retarded.

During a recent investigation of conditions at Georgia shipping points with regard to stem-end treatment, it was found that owing to the general railroad order requiring prepayment of freight on untreated cars, practically all growers were making a perfunctory application of the treatment in order that the statement "Treated for stem-end rot" might appear on the bill of lading. Not a single car, however, was found during three days' shipping points inspection in which treatment was performed in such a way as to prove effective against stem-end rot.

Consists of Two Steps.

Properly applied, the measure consists of two steps, (1) recutting the stem of the melon at time of loading in the car, so that a firm green surface may be obtained, (2) application of a homemade or commercial disinfectant paste to the freshly-cut stem. This should contain 6 per cent bluestone as a fungicide. The measure is not effective when melons are loaded with dead stems, as the fungicide is of service only when it forms a barrier between the freshly-cut surface of a healthy green stem and infection from without.

The above-mentioned study of loading methods practiced this year brings to light many contributing factors which lead to futility of the work. These factors are the result of lack of attention to the instructions sent out in department bulletins, and also printed on the containers in which the commercial fungicide is distributed.

For example, not a single car was found in which stems were being recut before treatment. Instances were noted where, in direct opposition to directions printed on the box, commercial paste was being mixed with cold water instead of boiling water, no effort being made to measure the water so as to secure the proper percentage of bluestone.

One case was found where a homemade starch paste that contained no fungicide whatever was being applied, and in another instance a farmer was plastering his melons with a concentrated bluestone paste that served to severely burn the rind. It was not unusual to find that many melons escaped treatment entirely. Occasional cars were also found that contained melons loaded with dead stems. In general the application of the treatment has been characterized by carelessness, numerous cars having been found with the entire end of the melon smeared with paste. Needless to say such melons make a poor impression at the market.

Percentage of Loss High.

As a contrast to the many reports received this year of cars containing wastage amounting in many instances to as much as 50 and occasionally 100 per cent of the load, the Department of Agriculture has on file a series of reports obtained last season on cars shipped from stem-end rot territory and treated under supervision of an agent in the field. It is interesting to note that the average loss shown by these reports amounts to less than 2 per cent. Attention to details of handling and loading melons will materially reduce losses in transit, and it is evident to any one familiar with conditions at the market that these losses must be reduced if the farmer is to continue to have a market for his product.

SHOWS DANGER OF MARKETING MILK FROM UNTESTED COWS

A glaring instance of the dangers of marketing milk from untested tuberculous cows was recently reported to the United States Department of Agriculture by one of its field men engaged in tuberculosis-eradication work.

At the request of the city meat inspector of New Haven, Conn., the Federal expert examined the carcass of a cow recently killed at a local slaughterhouse. The animal showed extensive lesions of tuberculosis in the lungs, liver, and other parts of the body. Investigation revealed that the cow had been sent to the city by a dairyman who was delivering the milk from his herd to an orphan asylum of the city, and also that the milk was not pasteurized.

Upon further investigation, in which the State authorities at Hartford cooperated, a test of the entire herd was made. Of a total of 25 cattle, 23 reacted to the tuberculin test.

BIG LOSSES IN WATERMELONS DUE TO IMPROPER SPRAYING

Severe losses in watermelons, particularly noticeable in the late shipments from Georgia and South Carolina, occurred this year due partly to the failure of growers to properly spray their vines, according to reports received by the Bureau of Markets of the United States Department of Agriculture through its Inspection Service. As a result anthracnose took a heavy toll from the profits of the growers. Extensive spraying work in Georgia and Florida done under the direction of the United States Department of Agriculture in the spring of 1919 was effective and successful, and the losses of the present season result largely from the failure of the growers to carry out the department's recommendations. Anthracnose does not usually become serious in dry seasons, but is always more destructive in rainy years such as the present has been.

Anthracnose starts in the field with infection of the watermelon foliage. The disease then spreads to the melons, on which it is first apparent in the form of raised pimples occurring on the rind. These vary in size from a spot that is barely visible to one sometimes one-half inch or more in diameter. When the field is severely infected, the melons may be almost completely covered with these spots, often called "pock marks." In case such melons are placed in a warm car, particularly when the humidity is high, the raised pimples develop into sunken spots covered with pink masses of fungous spores. At this stage other organisms of decay obtain entrance through the diseased spot, and as has often happened during the past three weeks, the car may arrive at market leaking water, the entire load a total loss.

Spraying the vines with Bordeaux mixture, according to directions given in Circular 90, United States Department of Agriculture, protects the field against this disease, and eliminates this loss in transit.

Planting No Longer Gamble With Nature—Average of Failures for Various Crops

Planting a crop is no longer "a leap in the dark" or a "gamble with nature." Speaking in broad national terms farmers can now tell something of the chances they are taking with various crops, owing to statistics which the Bureau of Crop Estimates, United States Department of Agriculture, has prepared. Crop harvest in the average of a long series of years is from three-fifths to four-fifths of the quantity that would be the return to the farmer were there not too much rain or too little, late and early frosts and freezes, hot winds, flood and hail, plant diseases, defective seed, and destructive insects and animal pests. To be sure, a farmer nowadays needs to be somewhat of an all-around scientist to cope with the many things that cause damage to his crops, or he may suffer from his unreadiness, but, thanks to statistics, he can tell something of his chances of success.

May Not Conform.

An application of the statistical method to the chaotic facts discovers that after all the average farmer of the Nation has an approximate range of prospects before him and a certain average which in the course of years he may trust. It must be recognized that the general national average may not conform to the experience of the individual farmer, nor is it likely to conform to the experience of farmers in particular regions where the damage from various factors may cause a loss of one-half, three-fourths, or even the entire crop in a single season. Few other industries are subject to such hazards or could sustain and survive such huge average annual losses.

For 11 crops, the Bureau of Crop Estimates has estimated annually during the last 11 years how much of a fraction has been taken off a possible full crop by various causes. Apples head the list with an average damage of two-fifths of a full crop, in some years as low as a little above one-quarter and in others as high as one-half and more. The late frost or freeze is the arch enemy of the apple. Next below in susceptibility to damage, caused in this case largely by deficient moisture, is the flax plant, producing seed and growing mostly in Minnesota, North Dakota, South Dakota, and Montana. The flaxseed crop is highly variable in these States and its damage from the causes mentioned ranges from one-sixth to more than three-fifths of a full crop in single years, and the average is more than one-third.

No one who knows cotton needs to be told that the outturn is very precarious. Not chiefly one cause alone, but various causes of damage menace it from beginning to end—too much as well as too little rain, the boll weevil and other insects, and diseases that attack the plant. It happens, therefore, that the various causes of damage, in their combined effect, reduce the full crop by as much as one-third or more, and that, while in a single year the damage may be as low as one-quarter, in another year it may rise as high as more than two-fifths.

Average Damage One-Third.

Corn, too, is subject to large deterioration, more so than may be generally supposed. The average damage is about one-third of a full production, with a yearly range from one-quarter to two-fifths. It has to contend chiefly with too little rain, but considerably also with too much rain, and with frosts, hot winds, and insects.

A crop with a damage nearly as great as that of corn is potatoes, the average of which on account of the causes mentioned is three-tenths of a full crop, the yearly variation ranging from one-fifth to more than two-fifths. This crop contends with too little rain, with plant diseases, insects, and too much rain, in diminshng order of importance.

One of the most uncertain of crops is spring wheat, largely for the same reasons that make flaxseed so uncertain—the two crops grow mostly in the same region. Winter wheat on the other hand is quite dependable after it has passed the dangers of winter. For the combination of these two crops of wheat, a damage of less than three-tenths of a full crop may be expected, but in some years it is one-fifth to less than two-fifths.

Barley averages well with wheat in its contest with its enemies, but its yearly range of damage is great—from one-tenth to more than two-fifths of a full crop, deficient rain being the conspicuous danger.

One-quarter of a full production is the average damage to the oat crop, but in one year it was one-sixth while in another year it was as high as two-fifths, owing to lack of rain.

Equally Susceptible.

Hay and tobacco are about equally susceptible to enemies that reduce them by about one-quarter of a full crop, but hay has the variable yearly result of one-tenth to more than one-third, while tobacco has a more steady range from one-seventh to one-quarter. Hay suffers chiefly from too little rain, tobacco from too little in a less degree and also from too much and from insects.

Rice is, comparatively, a crop of high promise, one that has an average reduction by enemies that is less than one-fifth of a full crop, and the range of variability is low, from less than one-tenth to less than three-tenths.

Flaxseed and barley are relatively undependable crops because, regardless of their average decline below a full crop on account of the causes mentioned, they vary greatly in the degree of this decline. On the other hand, for a contrary reason, tobacco, corn, cotton, and rice are relatively dependable although the decline may be great.

SMALL IMPORTATION OF TEA DUE TO ACCUMULATED SUPPLY

(Continued from page 1.)

during the war, and the second and third columns indicate that the quality and purity of the tea offered for entry into the United States has been of an increasingly high degree:

Fiscal year.	Pounds imported.	Pounds rejected.	Per cent rejected.
1913	95,539,667	1,461,787	1.53
1914	92,180,460	841,595	.9
1915	95,306,854	968,475	.9
1916	109,536,526	1,768,573	1.614
1917	105,961,158	954,425	.9
1918	148,654,384	2,354,277	1.58
1919	113,538,535	1,420,568	1.25
1920	96,862,858	145,246	.15

Notwithstanding that large quantities were carried over from previous years, the importations during the year closing June 30, 1920, were slightly larger than the importations during 1913, 1914, and 1915, though less than the abnormal importations during the war. The degree of purity of the tea offered for importation is shown by the fact that in the last two years only one small shipment was rejected, because of artificial coloring and facing.

The tea inspection service was transferred from the Treasury Department to the Department of Agriculture on July 1, 1920. The Supervising Tea Examiner and all his staff were at the same time transferred. The inspection in the Department of Agriculture is therefore to be done by the same men who did it for the Treasury Department. The inspection service was transferred to the Department of Agriculture for the reason that tea is subject both to the tea inspection law and to the pure-food law. Since the pure-food law is enforced by the Department of Agriculture it was believed that the tea-inspection work could better be done under the supervision of that department.

How to Load Turpentine in Tank Cars—Experts Study Production and Handling

How to load and unload turpentine in tank cars is of prime importance to the trade, say specialists of the Bureau of Chemistry, United States Department of Agriculture, who are studying the best methods for producing and handling turpentine and other naval stores.

The track where the tank car is cleaned should be absolutely level; otherwise, it is difficult to clean and fill it properly, say the specialists. Before beginning to fill the car, draw all water from the storage tank through the bottom delivery pipe, taking special care that the bottom valve of the car is closed tight and does not leak. While the car is being loaded the producer or seller should take a quart sample, made up of small portions taken at intervals during the filling of the car. This should not be neglected, as such samples are the seller's protection against claims for adulteration, low grade, and noncompliance with specifications. The sample should be set away in a dark, cool place in a full container until payment for the turpentine is received. If the turpentine has been sold on any definite specifications, a sealed portion of the sample in a full container should be forwarded for test, in accordance with the terms of the contract and specifications.

Loading the Car.

Load the car until the shell is completely filled, which can be done with certainty only when the car is perfectly level from end to end. Record the temperature of the turpentine at the bottom, middle, and near the top of the tank. It must be remembered that a tank car filled in the South may show an outage of several inches or more when inspected in the North, due to the difference in temperature between the shipping and receiving points. If the average temperature of the turpentine is above or below 60 degrees F., the contraction or expansion which will take place on cooling or warming to that temperature can be determined.

It is advisable to load tank cars from storage tanks early in the morning during hot weather. The turpentine is cool then, and the car will show less outage on arriving at its destination than it would if it had been loaded with warm turpentine. To allow for the contraction in volume which usually occurs when turpentine is shipped from southern to northern points in tank cars, many shippers load the car several inches up into the dome, according to the temperature. The higher the temperature of the turpentine when loaded, the higher in the dome the car should be filled. The total expansion or contraction for any difference in temperature may be determined by multiplying together the measured gallonage, the difference between the average temperature of the turpeatine and 60° F., and the factor 0.000525.

Unloading Cars.

When ready to unload, the tank car should be exactly level, especially from end to end, the outage carefully measured, and the temperature taken with an accurate thermometer, as directed above. The bottom valve should then be opened slightly and any water contained in the car drained off and measured. After the water has been removed, connection should be made with a receiving tank and the valve opened wide. If the turpentine is to be tested for grade and purity, samples should be drawn while unloading, and preserved as above directed.

ALFALFA WEEVIL SPREADING TO OTHER WESTERN STATES

The alfalfa weevil has been found in various places around Reno, Nev. Heretofore this very serious pest of one of the most important forage crops has been known to exist only in a limited area in northern Utah, south and southeastern Idaho, southwestern Wyoming, and western Colorado. Its presence has been suspected elsewhere, and the Secretary of Agriculture asked Congress for an additional appropriation of $10,000 to enable the department to determine accurately the distribution. Congress declined to make the appropriation and the work could not be done. There have been grounds for believing that the pest is present in western Oregon. Where the weevil is known to exist, control measures worked out by the Department of Agriculture can be applied at a cost of not greater than $1 an acre, and they give complete control for the season. Where this pest becomes prevalent it reduces the yield of alfalfa to the extent of hundreds of thousands of dollars each year.

WHEAT MIDGE ENTERS NORTHWEST.

The wheat midge is working down into the spring-wheat region of Washington from the Canadian Northwest. This insect has been present for a number of years in the eastern portion of the United States, extending as far south as West Virginia, but, as it is chiefly injurious to spring wheat, which is not largely grown in the eastern section of the United States, little close study has been made of it. Now that the insect appears to be about to establish itself in the spring-wheat regions of the Pacific Northwest, the United States Department of Agriculture, through its specialists in the Bureau of Entomology, has begun a systematic study of the habits of the midge. This insect is a small fly closely resembling the Hessian fly, but living between the glumes and the berry instead of in the stalk, as the Hessian fly does. This insect is said to have caused a loss of $15,000,000 in New York State during the years 1857 and 1858.

EXCHANGE SITUATION LEADS TO RECORD BUTTER IMPORTS

The record for butter imports established in 1919, when 9,519,368 pounds of butter and butter substitutes were brought into the United States, was short lived. Following the recent announcement of these import figures by the United States Department of Agriculture the department has compiled reports for the first seven months of this year which show that the United States during that period imported 22,855,090 pounds of foreign butter, which is more than ever before.

This remarkable increase is attributed by foreign marketing experts of the department's Bureau of Markets largely to the foreign exchange situation. With American dollars commanding a premium throughout the world it is obviously good business for foreign butter manufacturers to sell their product in the United States. Foreign manufacturers also have the advantage of low cargo rates. Another reason for the increased imports is that whereas England was formerly Denmark's principal butter outlet, England can now purchase butter more cheaply from Australia and Argentina. Ireland also is producing butter on a larger scale.

The effect of the exchange situation is also reflected in a decrease of American butter exports. Thus, 15,529,271 pounds of American butter were exported during the first seven months of 1920, whereas 22,986,294 pounds were sent out of the country during the corresponding period of 1919.

Imports of butter from Denmark are being curtailed at present because the prices asked by the holders of Danish butter in storage here are higher than the wholesale prices for the American product, and some difficulty is being experienced in moving the Danish stocks.

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NEW INSECT PEST THREATENS CROP DESTRUCTION IN SOUTH

Mexican Ladybird Attacks Bean and Cowpea Crops in 10 Alabama Counties.

Fear Spread of Infestations to Other Southern States—Pest Works with Great Rapidity—Ruins Entire Crop in Three to Six Days—Plan Protective Measures.

A new bean and cowpea pest known as the bean ladybird or Mexican bean beetle (Epilachna corrupta Muls.), which has for many years been established in the semiarid Southwest as a serious pest, has just been reported from 10 counties in Alabama centering at Birmingham during the past summer. It is feared that this infestation may already have spread to other portions of the State, if not to the States of Georgia, Tennessee, and Mississippi. If this pest is not thoroughly and immediately eradicated, it may produce as disastrous results to the bean and cowpea crops of the South as the Colorado potato beetle or the sweetpotato weevil to the crops which they attack. An average of 50 per cent loss to the bean and cowpea crops of the infested counties is already reported.

Destruction Rapid.

The beetle works with great rapidity and in three to six days may ruin an entire crop. In the West this pest is confined to edible and soy beans as a food plant. Its new habit of feeding upon cowpeas tremendously increases its possibilities for injury. Since it may also be found to subsist on velvet beans, the Kudzu vine, and related plants, there is no barrier to its continued spread over the entire eastern United States. Like the Colorado potato beetle, it can withstand any extremes of temperature which it is likely to meet. The Mexican bean beetle has recently been the subject of a publication, Farmers' Bulletin 1074, in which its present known distribution outside of Alabama has been mapped. If unchecked, this insect may spread rapidly to neighboring States, thence northward until the entire Eastern United States is overrun, since it is capable of breeding wherever beans are grown. The serious possibilities to the South through the present outbreak may be compared relative to the crop with those experienced on account of the boll weevil. While the insect has appeared in Alabama apparently through a "commercial jump," probably with shipments of western alfalfa hay, it flies readily and has created a problem very similar to that of the Colorado potato beetle in the past.

The most important point in regard to this eastern outbreak is to determine the exact limits of its present distribution. It seems probable that it has been present in Alabama for at least 8 or 10 years, if not longer, and as its known distribution already extends to the border line of Georgia and very close to that of Mississippi, this problem must be carefully considered.

(*Continued on page 12.*)

GIVE BOYS AND GIRLS A PERMANENT PLACE AT THE FAIR.

On the shoulders of the farm boys and girls of to-day rests, in considerable measure, the future of American agriculture. Their success or failure financially and their satisfaction or dissatisfaction with their environment is of direct importance to the whole country. I have always been much interested in what the boys' and girls' clubs are doing to help them, and I believe this important and far-reaching branch of extension work should be encouraged in every feasible way.

One of the needs of the clubs is more adequate housing on the State and district fair grounds for the club members and their exhibits. At most of the fairs tents are now used for this purpose. These have proved to be very inadequate, especially when the weather is bad. A movement is now under way, which I am very glad to indorse, to provide a permanent exhibit building and a permanent camp for the junior farmers on every large fair ground. This would emphasize the importance of the work these young people are doing and make them feel that their aid in promoting the interests of agriculture through exhibits at fairs is being properly appreciated.—E. T. Meredith, Secretary of Agriculture.

ARMY AIMS TO TRIPLE HORSE BREEDING SERVICE FOR 1921

Anxious to Gain Cooperation of Farmers and Stockmen Generally.

Will Establish Governmental Breeding Centers in Such Localities as Conditions Warrant—Many Applications Already Received for Stallions to Be Bred.

[NOTE.—Because of its bearing on the work of the United States Department of Agriculture in the breeding of military horses and upon horse breeding generally, the following article, prepared in the Office of The Adjutant General of the Army, is commended to readers of the News Letter.]

Such great progress has been made in the United States Army's new project for encouraging breeding of horses among the farmers and stockmen of the country that plans are now under way to triple the Government's breeding service for 1921. Congress has appropriated $250,000 for the work.

According to an announcement made by Maj. Gen. P. C. Harris, The Adjutant General of the Army, there have been bred this season about 1,000 mares belonging to civilians and to the Government in different sections of the United States. These mares may generally be divided into two classes: First, a well-bred type of riding animal ranging from 1,000 to 1,150 pounds in weight. Second, a rather drafty type of active mare showing a lot of quality with good neck and shoulders, weighing from 1,150 to 1,300 pounds. The mares at Front Royal, Va., come generally under the first class, many of them being half-bred or standard-bred mares. At the other three Army depots the active draft type of mare predominates.

Horsemen Lend Aid.

The breeding committee of the American Remount Association, made up of some of the most prominent horsemen and breeders in the country, has entered enthusiastically into the Army's ambitious program for the improvement of American horseflesh, and all have volunteered their services to help and advise

in any manner possible. A glance at this list will show the type of horsemen now assisting the Army in its endeavor to reach the American farmers, stockmen, and breeders generally. They are:

Maj. C. L. Scott, Washington, D. C., chairman.
William Woodward, New York City.
Lieut. Col. N. C. Shiverick, Avon, N. Y.
Lieut. Col. Wm. Littauer, Washington, D. C.
F. Ambrose Clark, Westbury, L. I.
David M. Look, Lexington, Ky.
Geo. M. Rommel, Washington, D. C.
Geo. C. Digman, Front Royal, Va.
Prof. J. J. Hooper, Lexington, Ky.
Prof. J. L. Edmonds, Urbana, Ill.
Prof. E. A. Trowbridge, Columbia, Mo.
Maj. W. H. Neill, Boise, Idaho.
Col. H. C. Whitehead, Louisville, Ky.
A. B. Hancock, Paris, Ky., vice chairman.
Maj. Henry Leonard, Washington, D. C.
Capt. A. H. Jones, Fort Reno, Okla.
W. R. Brown, Berlin, N. H.
Charles Mather, Philadelphia, Pa.
B. B. White, Leesburg, Va.
Col. C. E. Hawkins, Kansas City, Mo.
Dr. R. G. Lawton, Lexington, Ky.
G. Howard Davison, Millbrook, N. Y.
F. K. Sturgis, New York City.
C. N. Arnett, Wallis, Mont.
Col. W. N. McClure, Sacramento, Cal.

The Army Remount Service now has on hand 45 thoroughbred stallions and two Arab stallions, all donated by or through the influence of the American Remount Association. These have assured the success of the proposed breeding plan.

The Secretary of War has been authorized by Congress to accept such donations of animals in order to encourage the breeding of riding horses suitable for Army use. The Quartermaster General has been designated to represent the Secretary of War in taking over these stallions and in accepting money to be used as prizes or awards at State and county fairs, agricultural exhibitions, and horse shows.

Requirements for Breeding Centers.

For the 1921 season there are already many applications for stallions to be bred under the Army's new scheme, received from a number of very reliable persons. From 100 to 150 stallions can be placed to great advantage for next year. For this the Army is very anxious to gain the cooperation of farmers and stockmen generally, and to this end will establish governmental breeding centers in such localities as conditions warrant. The Army requirements are threefold:

First. These breeding centers must be located in places where there are a sufficient number of suitable mares for raising riding horses which may be used as a source of cavalry and artillery mounts. These mares must be active and well built, and should range between 1,000 and 1,250 pounds in weight.

Second. Farmers, horse owners, and stockmen of the locality must indicate a desire to breed light horses, because the stallions are not intended to serve heavy draft mares.

Third. For making any locality an Army breeding center there should be general interest in horse raising throughout the community, not only among horsemen alone, but the farmers generally.

In all the centers established, and those to be established, the War Department insists that there be local interest in horse raising, and to help out in the plan, Government stallions, mares, and colts have been shown at all State and county fairs where possible, and will be shown in the future.

To Have Civilian Assistant.

The Army officer in charge of each of the five remount purchasing headquarters has been authorized to hire one civilian assistant in each breeding center in his territory, to be known as the "local agent." As a rule, these latter are good horsemen, who are popular and well known and who take active interest in breeding.

Every agent is paid a fee for each mare that is properly bred in a season. To receive this fee, he must have taken steps to determine whether each mare is in foal at the first service, and to give second and third service, if such is necessary. This local agent is expected to care for the War Department's stallion, conduct, and supervise the breeding in his center, and generally comply with such instructions as may be issued to him by the Army officer in charge of breeding in his zone.

These remount purchasing zones are five in number. They are:

Atlantic States—including all New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Tennessee, Kentucky, West Virginia, and Ohio. Headquarters, Louisville, Ky.

North Central States—Indiana, Illinois, Iowa, Missouri, Michigan, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, and Colorado. Headquarters, Kansas City, Mo.

South Central States—Mississippi, Arkansas, Louisiana, Oklahoma, Texas, and New Mexico. Headquarters, Oklahoma City, Okla.

Pacific States—California, Nevada, Utah, and Arizona. Headquarters, Sacramento, Calif.

Northwestern States—Montana, Wyoming, Idaho, Washington, and Oregon. Headquarters, Boise, Idaho.

The stallions sent out to breeding centers will be only those proved suitable in the stud. They are always carefully inspected by the officer in charge of the district and by the veterinarian before being sent out for breeding by the local agent.

Stud fees will be charged for all stallions, and this fee, by order, is to be the same as the local fee usually charged for privately-owned stallions. But the Army's finest types of sires will be at the service of local breeders at what is practically a nominal fee, when it is considered that owners of some of the best blue ribbon horseflesh in the country charge from $100 to $1,000 without a guaranty.

The local agent will assist in selecting the mares to be bred. These animals should be of such type and conformation that good results shall be secured, and they should be of good disposition and sound. If after inspection the mare is considered suitable, the owner will receive a certificate of suitability.

The offspring is the property of the owner of the mare and can be disposed of in any manner and at any time that the owner sees fit. The Government has no lien on the get. In order, however, to encourage breeders and establish a horse market in every breeding center, the Government, whenever horses are required to be purchased for the Army, will inspect and buy such offspring in each center as Army need requires, provided that the animals are up to military specifications.

Suitable, clean, well-ventilated stables for the stallions are necessary in every breeding center. Forage will be furnished by the Government, either by shipment or by local purchase.

After all arrangements have been made, the stallions assigned to the local breeding center will be sent out and turned over to the agent. He is responsible for the animals and for their actual breeding to approved mares. He is also charged with bringing in the mares for breeding or sending out the stallions on the road. At the beginning of the season stallions are to be sent to breeding centers in such numbers as to care for all the mares in the locality that are suitable. Stable facilities will be provided by the Government for all stallions when not on the road.

To Breed Several Fine Types.

As a result of this new plan the Army expects to breed several fine types of horses which should have good markets. These are: Hunters for civilian use; polo ponies; park riding mounts; Army horses; officers' chargers; and fine farm horses.

The Army remount officers will give advice to all farmers and stockmen where they request it. Prizes will be offered at State and county fairs for the best colts

(*Continued on page 11.*)

ASKS PACKERS TO COOPERATE IN INCREASING MEAT SUPPLY

More Economical Production Generally Demanded, Says Dr. Mohler.

In Address Before Institute of American Meat Packers, Says Continued Falling-Off in Meat Consumption Would Hurt Whole Live-Stock Industry.

Declaring that a continuance of the present downward trend in meat consumption in the United States would have an unfortunate effect upon the whole live-stock industry, Dr. John R. Mohler, Chief of the Bureau of Animal Industry of the United States Department of Agriculture, in a recent address before the Institute of American Meat Packers, outlined a constructive program for increasing the Nation's meat supply and asked the institute to lend its support. Dr. Mohler discussed the work being done by the bureau to encourage the breeding of better stock and cut down losses due to diseases.

More economical production of meat, he said, is generally demanded to-day, and "the obvious means of reducing cost in making meat is to raise the quality and to put greater human skill into its production." He alluded to "the unfortunate tendency in some circles to assume that all expenses, whether justified or not, should be passed along to the consumer."

Dr. Mohler's address was as follows:

"In meeting with you on this occasion I recognize that you have gathered to discuss and, if possible, to improve some of the conditions in the meat industry. I need not review them in detail. They are all familiar, although perhaps the problems of labor and economical distribution of meats are the most important from a trade point of view. But along with those considerations you may be interested in learning what the Federal Bureau of Animal Industry is now doing to increase the quantity and improve the quality of American live stock, and, of course, the resulting meat and other products.

Public Sentiment a Factor.

"In conducting its various lines of work assigned or authorized by Congress, the bureau is concerned particularly in assisting live-stock producers to raise their stock with a maximum of skill, also in insuring to American consumers a supply of meat that is as wholesome and safe as the meat-inspection service with your cooperation can make it. Other branches of the Government and the commercial trades likewise are concerned in the various steps and processes which live stock and their products undergo from the time they leave the farm until they reach the consumer's table. But we all must recognize that live-stock problems can not be considered piecemeal. We can not hope to establish minor policies and permanently remove minor annoyances until there is general agreement on the larger factors. And besides the so-called economic causes which involve the physical handling of meat products, we must consider likewise the trend of public sentiment, including the attitude of producers toward the business of making meat and consumers toward using it.

Economy in Production Cost.

"My observations of the farm press and the consensus of opinion at live-stock gatherings show a general demand for more economical production. 'How can we cut down the cost of making meat?' That is one question that is sincerely asked and the answer of which is sincerely looked for. This attitude of producers toward greater skill in production is most encouraging. The attitude is entirely apart from the unfortunate tendency in some circles to assume that all expenses, whether justified or not, should be passed along to the consumer.

"Although the answer may seem paradoxical, the obvious means of reducing cost in making meat is to raise the quality and to put greater human skill into its production. The Bureau of Animal Industry has found likewise that it can render its greatest service to the public when it interests itself in serious problems which many people are earnestly trying to solve rather than to develop projects in which interest may be limited. From its beginning the bureau has fought animal diseases and is still doing so, but it is likewise developing work that will aid in hastening live-stock improvement. Most of you are no doubt familiar with the slogan, 'Better Sires—Better Stock.' Its purpose in connection with a systematic campaign now being conducted throughout the country is to direct attention to the necessity of better sires as a means of improving live stock in the United States. Through a system of records obtained from live-stock owners active in this work, we have been able to verify certain conclusions and deductions obtained from experience. We know that, for practically all classes of live stock, males used for breeding are only from one-twelfth to one-fortieth as numerous as females, and to replace inferior sires with good ones is a thoroughly feasible undertaking. These figures are obtained from a knowledge of breeding stock kept on about 2,500 farms and representing practically one-fourth of a million animals. When farmer after farmer writes the department that he is using purebred sires only and will continue to do so indefinitely and induce his neighbors to do likewise, we know that a campaign of this kind will respect no boundaries. There is interest in all parts of the United States and even in Hawaii and Guam, although no efforts have been made to conduct the work outside of territorial United States.

Follows Educational Work.

"Yet more encouraging even than the remarks of purebred-sire users is the constant stream of declarations by persons whom the campaign is inducing to make a change from inferior stock to a better class. On the 1st of October of this year the better-sires movement will be just a year old, and its influence can scarcely be measured adequately at such an early date. Yet I am confident that in another year the various activities which it is encouraging will give farmers in this country a clearer knowledge of live-stock economics than has ever existed before. There has been persistent publicity, which in turn is now resulting in organization, generally with a county as the unit. In many cases the county agents encourage the organization of local live-stock associations. Frequently banks stimulate such an activity by arranging for the introduction of good breeding stock, especially sires, on con-

(Continued on page 6.)

AGRICULTURE A BASIS FOR THE BUSINESS OF THE COUNTRY.

"Too many business men, I am afraid, have failed to appreciate fully the importance of agriculture or their dependence on it. This has resulted, in many instances, in lack of sympathetic understanding of the farmer's problems and of the difficulties confronting him not only in producing his crops or live stock but also in the marketing of his products. Agriculture furnishes the basis of much of the business of the country. There are many industries which are entirely dependent on it, such as the manufacturer of farm implements and machinery, the packing houses, the grain merchants, and many others; and farm products, of course, play a large part in transportation. Neither the business man nor the farmer, therefore, can be genuinely and permanently prosperous without the good will and the material aid of the other. Whenever a business man does anything toward making the agriculture of his section more profitable to the farmers, he does something which will help his own business, because there is not in the United States any business center that could continue to prosper independently of the farming communities surrounding it."—Edwin T. Meredith, Secretary of Agriculture.

TELLS OF WORK TO PREVENT DUST EXPLOSIONS IN MILLS

Similar Explosions Have Occurred in Every Type of Industrial Plant.

Disasters Result in Loss of Life and Destruction of Millions of Dollars Worth of Foodstuffs and Property—Department of Agriculture Leads.

When we talk of "dust explosions" in mills and factories we appear to many to be discussing a "mysterious" subject, David J. Price, engineer in charge of grain dust explosion investigations of the Bureau of Chemistry, United States Department of Agriculture, told the National Safety Council Congress in session at Milwaukee, Wis., September 29. Continuing, Mr. Price said:

"During the period of 9 months at least 6 disastrous explosions occurred in industrial plants in the United States and Canada. These explosions resulted in the loss of 80 lives and several million dollars' worth of foodstuffs and property. In some instances the explosions have taken place in certain industries where the dust produced during the operating process had not been previously regarded as dangerous. In other cases a thorough investigation of each explosion developed new causes of dust explosions that had not heretofore been determined.

Studied Grain-Dust First.

At the time of the origin of the dust-explosion work now being carried on by the Bureau of Chemistry, United States Department of Agriculture, the study was confined entirely to explosions during the handling or milling of grain. The project was a development of the coal-dust explosion work of the Bureau of Mines. Naturally attention was directed to the investigation of explosions in grain elevators, flour mills, cereal plants, feed-grinding plants, and similar lines of milling. However, explosions of this nature have taken place in every type of industrial plant—starch factories, sugar refineries, cocoa and chocolate plants, spice works, wood-working establishments, paper mills, and shoe factories. A recent explosion of "aluminum dust" occurred in Wisconsin and cost the lives of six girl operators. These dust explosions can occur in any industrial plant where explosive dusts are created during the manufacturing process. It is therefore essential that precautionary measures be adopted for their control and prevention.

"The loss of life in many of these explosions has been very great. The percentage of employees killed, based on the total number in the plant or working in the area affected by the explosion, is high.

"One of the interesting developments has been that at least three of the most disastrous explosions that have recently taken place occurred at times when the full working force was not at the plant. The most disastrous explosion of this nature that has ever occurred in this country took place in a middle western factory about 6.30 in the evening, shortly after the day shift had left. As it was, 43 lives were lost. Had the explosion occurred a few hours earlier, during the active period of day operation, the fatalities can only be imagined. In two disastrous explosions in grain elevators a similar situation existed. In one case in Canada, the explosion occurred during the noon hour, but 10 men were killed. In the other grain-elevator explosion 14 men were killed and the few remaining men were very badly injured. The explosion occurred about 2 p. m. on Saturday afternoon, when some of the employees were enjoying an extended Saturday lunch hour. Very few of the men actually in the elevator escaped with their lives.

A Scientific Fact.

Scientific research has settled that dust will explode. Miners have doubted this in the case of coal dust, often attributing mine explosions to methane gas, but the Bureau of Mines has demonstrated to the satisfaction of the mining industry the dangers of "coal-dust" explosions in the tests in the experimental mine near Pittsburgh. In the industrial plant the gas theory can not be so forcibly advanced. Since it is a physical impossibility to have an explosion without some explosive agent being present, a dust explosion can not take place unless the dust is present and in sufficient quantities to "spread" or propagate flame. This makes very evident the necessity for the adoption of effective dust-control and removal methods.

"In many of the industries, this is an essential requisite, especially if the product is commercially valuable. This would apply to flour, sugar, starch, cocoa, and similar products where the price per pound justifies the collection of the material. This gives return for the installation and equipment required and also prevents the dust from escaping and spreading throughout the plant.

"Aspiration systems in grain elevators for dust removal have given at least two main returns for their installation that are of interest to engineers engaged in safety work—(1) reduction in explosion and fire hazard; (2) improvement in working conditions. In addition the reductions in the fire hazard is recognized by the insurance companies with corresponding reductions in rate.

"In an explosion of chocolate dust in a New England factory six lives were lost and $1,000,000 property damage done by the explosion which originated in the exhaust fan. An explosion occurred in a western flour mill and one of the causes assigned was sparks produced by the exhaust fan slipping on the shaft. A very disastrous explosion of aluminum dust, causing the death of six girls, was attributed to metallic sparks produced by a piece of wire striking the blades of the fan and igniting the dust in suspension.

Dust in Fan Flamable.

"When the dust passes through the exhaust fan a flamable mixture is usually formed which explodes if the ignition source is present. Ignition may be caused by sparks from foreign materials striking the fan blades or from the blades becoming loose. What can be done to remove this apparently newly developed hazard? Can the position of the fan be changed from a location between the source of dust production and collection, to a position beyond the collector? In other words, can we draw through, rather than blow into, the collector?

"The investigation of recent disastrous grain-dust explosions has directed attention to the electrical equipment and its relation to the cause of these occurrences. In this relation the incandescent electric lamp has appeared prominently. Explosions have been caused in some of the large industrial plants when the lamp-bulbs were broken in dust clouds. This has been particularly true when extension cords have been lowered into dusty bins or introduced into elevator legs and similar operating equipment. Tests conducted in cooperation with the lamp manufacturing companies have shown that explosion of these dusts can be readily produced when the lamp bulbs are broken in dust clouds. This is true irrespective of the type of lamp.

"In addition to the explosion hazard, it developed that numerous fires appeared to originate, especially in grain elevators, from the dust settling on the globe and reaching the point of ignition. This "dust aflame" in falling to the floor or onto combustible material would cause a fire of "mysterious origin." The experimental work recently carried on indicates that fires can be produced when light, fluffy dust, such as would be created in the handling and elevating of grain, settles on the electric lamp globes.

"An effort is now being made by the engineers of the lamp companies to design equipment that will afford an additional factor of safety. In many of the cases referred to practices were followed in the plant that should be eliminated. It is extremely dangerous to permit an employee to lower an electric lamp of this type into a dusty bin. The lamp should be protected with approved vapor-proof equipment and well guarded. Attention must be given to this source of dust ignition in the industrial plants, and only safety practices followed. In a very recent case one of the officials of a large eastern grain company introduced an extension lamp into an elevator leg and caused an explosion which endangered a number of lives and a large supply of grain in storage.

"Provision should be made in industrial plants for the control of static electricity. Effective results have already been obtained by proper grounding methods. Electrical engineers engaged in plant operation should give this particular cause their consideration in order that effective preventive installation can be developed.

Should Improve Type of Building.

"In the construction of new industrial plants where explosive dusts are created, engineers should give consideration to dust-explosion prevention. The extent of a recent disastrous grain-dust explosion was closely associated with certain features of construction that permitted large quantities of dust to accumulate. The construction should be of such a type that dust can not collect or settle in certain parts of the plant and thereby increase the explosion hazard.

"The lack of knowledge concerning dust explosions has been largely responsible for these disasters in our large manufacturing plants. The value of educational work was well illustrated in the special emergency dust explosion prevention campaign conducted by the United States Department of Agriculture during the war period, and also in the work of the United States Grain Corporation to protect Government wheat and flour stocks in storage from explosion and fire. During this campaign an effort was made to acquaint both the workmen and the officials in the plants with dust-explosion dangers. It is interesting at least to note that from October, 1917, to May, 1919—a period of 19 months—not a single disastrous dust explosion occurred in a flour mill, cereal plant, or grain elevator where the workmen had been asked to cooperate in the prevention work. In the 20 months preceding the period referred to, five explosions in the United States and Canada killed 36 people and destroyed $6,000,000 worth of property and foodstuffs.

"This educational work was well received and supported in every section of the country. The success of the campaign was made possible by the splendid cooperation given by the milling and grain industry, together with the fire-prevention agencies and commissions established to conserve our food supply. As a result of this effort the United States Grain Corporation suffered no extensive explosion and fire losses during the entire period of its existence. The importance of the saving thus effected is well indicated, when we consider that practically at all times the value of the stocks in storage was $100,000,000 and at certain times approximated $500,000,000.

"There are important lines of research work that demand early attention in dust prevention, and are included among a number of others in the projected programs of the bureau. The appropriation for the Department of Agriculture for the current fiscal year does not include funds for the proper extension of dust-explosion work. In fact, the entire field organization, which included competent engineers, trained in dust-explosion prevention, has been entirely disbanded and the work that can be done by the Bureau of Chemistry will be necessarily limited to a very small laboratory scale. The research lines referred to, as well as many others equally important, can not be taken up until the appropriations recommended by the Secretary of Agriculture are made available and the work properly developed.

Hazard Increases.

"As our industrial plants increase in size, capacity, and production the dust-explosion hazard increases on the same scale. The more dust created the greater the possibility of a disastrous explosion. The utilization of by-products that heretofore were discarded in the industries has led to additional dust creation, especially if grinding operations are a part of the process. The importance of dust-explosion prevention has been well emphasized by extensive losses in recent explosions. Is the work of sufficient value to the industries of the country to have provision made for its proper development? Before we can expect to prevent these losses of life, foodstuffs, and property we must acquire more knowledge concerning the causes of these dust explosions and methods for their control and prevention. The support and endorsement of the National Safety Council will be of value in determining the real importance of the work as it relates to the industries of the United States and Canada."

Reduce Late Blight and Rot of Potatoes In Storage by Delaying Digging Till Frost

In States where the Irish potato foliage has been badly attacked by the late blight disease and rot is threatened, it is best to delay digging until 10 days or longer after the tops are fully dead, preferably until after a frost has killed the vines, say specialists of the Bureau of Plant Industry, United States Department of Agriculture. Earlier digging will result in more field tuber infection and subsequent development of rot in the cellar. Experiments have shown that the smallest percentage of tuber rot in storage follows the practice of delayed digging.

Severe This Season.

Late blight has been more or less general and severe this season in the New England States, New York, Pennsylvania, Ohio, northern New Jersey, western Maryland, and West Virginia, and was especially prevalent, on account of the cool, rainy weather which prevailed in these States throughout the latter part of July and most of August. In some instances the onset of dry weather which frequently comes about the last of August has checked the disease.

Tuber infection takes place chiefly in the field when the potatoes are dug too soon after the tops die down with the disease and while the fungus is yet alive. By delaying the digging until the tops have been dead some time or until a freeze kills the stems, the fungus also is killed to a large extent and hence little or no new tuber infection takes place.

Labor Supply a Factor.

The large commercial grower must consider his labor supply in relation to the time available for digging before the potatoes will be frozen in the ground and delay his digging as much as consistent with getting the crop out before frost injury. In the most northern sections not as much delay can be practiced as in States farther south. It is the farm-home supply which can be dug in a few days where the greatest advantage can be taken of this means of reducing field tuber infection and subsequent storage rot.

ASKS PACKERS TO COOPERATE IN INCREASING MEAT SUPPLY

(*Continued from page 5.*)

venient terms. In brief, this campaign of education, though still young, is aggressive and constructive. It has brought in thousands of requests for Government bulletins on the selection, care, and breeding of domestic animals, and there have been practically no complaints notwithstanding the varied interests which it involves.

"The department also has constantly warned prospective purchasers of purebred sires to look further than the pedigree itself. It has pointed out the necessity not only for purebreds, but for good purebreds, and the principal breed associations have upheld this policy.

"It is a commonly accepted fact that quality in live stock, as in other things, is a very desirable asset. So I think we may appropriately refer very briefly to some of the practical possibilities which underlie a betterment in the quality of our farm animals. This audience, of course, is perfectly familiar with the numerous grades of live stock that appear daily at the stock centers. Yet, because quality is not so easy to define in exact terms of scale or measure, the less experienced and uninformed producers often fail to apprehend many things which the expert sees at a glance.

Reduces Feeding Risks.

"For example, it is not always easy to convince the owner of a scrubby ill-bred lot of steers that it is a risky investment to prepare such animals for market. Similarly, there are dairymen who still continue to waste good feed on poor-producing cows, largely because they can not grasp the economic value of quality as an inheritance of properly bred and selected animals. The Animal Husbandery and Dairy Divisions of the Bureau of Animal Industry have proved these points time again through experimental work, and we lose no opportunity to disseminate such information through the department publications and the press.

"A concrete example of the effect of quality may readily be estimated from the slaughter records of animals, and this, I need hardly mention, is a familiar phase of the subject to you. Take the case of cattle. In converting cattle into beef the Bureau of Animal Industry uses, as an average of the entire kill of the United States, a dressing percentage of 53½, which figure, by the way, is the same as that ascertained by the census. Poor breeding without doubt is a prime cause of this low percentage. Proof of this is furnished in experimental feeding of southern cattle conducted by the bureau in recent years wherein the animals dressed in one case 58 and in another slightly over 59 per cent. These cattle were just grade animals selected in the localities where the feeding took place, and, moreover, they were fed on economical feeds. You all know that high-class beeves will dress still higher than this.

"Suppose, then, our efforts at improving cattle should within a reasonable time raise the general dressing average only 1½ per cent—that is, from 53½ to 55 per cent. What would be the resulting increase in beef? On a basis of total annual production of 7,000,000,000 pounds, which we estimate to be the average dressed-beef production for the last two years, the increase would be 200,000,000 pounds a year. This is far from being a negligible quantity; in fact, it just equals our average annual exports of beef products for the last 10 years, including, of course, the war period.

"The department is now making arrangements to find out the principal causes of runty and other undersized domestic animals. Runts on American farms may be ignored individually, but in the aggregate they are by no means unimportant. To raise runty stock generally requires extra care and expense in one form or another. Through experiments the bureau has learned that undersized live stock may be the result of numerous circumstances. Internal or external parasites will stunt growth. Disease and exposure will do the same. Overcrowding or insufficient exercise likewise interferes with rapid growth and satisfactory market development, and, of course, breeding is a major factor. When you consider that a steer of inferior breeding may weigh less than 400 pounds at 3 years of age, while a better bred steer will weigh three or four times as much in less than that time, the subject of size and development is both a fascinating one to study and one that promises tangible results. To supplement the present knowledge of runts and their cause the bureau is making a questionnaire investigation to determine how closely the general experience of stockmen coincides with experimental results.

Current Work on Soft Pork.

"In this connection it is interesting to note that the soft-pork investigations of the bureau show that thrift or a lack of thrift appear to influence the firmness of the slaughtered carcass. Feed is the most important factor in the production of soft pork, but our investigations show that there are several other factors that can not be ignored. The stage of maturity or the degree of finish apparently influences the firmness of the meat, since in most cases well-finished carcasses are superior to those of hogs slaughtered when immature or lacking in condition. As you are aware, investigations on soft pork have been in progress scarcely a year and we are not yet ready to draw definite conclusions. However, more than 200 hogs fed in various Southern States, principally in North Carolina, Georgia, Mississippi, and Texas, have been slaughtered at the bureau experiment station at Beltsville, Md. In addition to a thorough examination of the carcass, chemical tests have been made on fats. In general, the condition known as soft pork is accompanied by a lower melting point of the fats. This year cooperative experiments have been arranged for with the experiment stations of North and South Carolina, Georgia, Alabama, Mississippi, and Kentucky. Possibly several other stations may be included also. The carcasses are to be examined by a cooperative committee of three, one representing the agricultural experiment stations, the second the Bureau of Animal Industry, and the third the Institute of American Meat Packers. Mr. H. R. Smith is the representative of the institute and will be in a position to keep you informed on the further progress of soft-pork work.

Hog-Cholera Control Hampered.

"While discussing the subject of pork I may refer briefly to the hog-cholera situation. As you know, a curtailment in funds for this work has necessitated a large reduction in the bureau's staff of veterinarians and other field workers who in the past have been combating cholera outbreaks. We are hopeful that while this situation exists no extensive outbreaks will occur. The bureau is about to issue a poster urging farmers to watch for sick hogs and giving directions for proper action so that cases of cholera which may occur will spread as little as possible.

"The conditions that led to the inauguration of hog-cholera work by the bureau in 1913 are, no doubt, well known to the members of this association. The heavy losses from hog cholera made it desirable that some action should be taken to stimulate and protect the swine industry. Just prior to the launching of the project as many as 6,300,000 swine, valued at over $67,000,000, had succumbed to the disease in a year. The reliability of the serum-prevention treatment against hog cholera had been proved beyond question and it was felt that definite action should be taken to bring its possibilities to the attention of swine growers through field demonstrations. Congress made an appropriation for this purpose and the bureau formulated plans to carry on field work in cooperation with State regulatory authorities and State agricultural colleges. Obstacles were met in the beginning owing to the prejudice

of many farmers against the serum treatment, their lack of information concerning the nature of the disease, their disinclination to follow advice in regard to sanitary precautions, the failure of State regulatory authorities to enforce quarantine measures, and the belief among veterinary practitioners that these activities were destined to deprive them of their incomes from the practice of their profession. Most of these obstacles were gradually overcome and the losses from the disease have decreased steadily from 144 per 1,000 in 1897 and 118 per 1,000 in 1913 to 38 per 1,000 in 1919. While we do not claim the entire credit for these immense savings of pork, we do believe that we have been instrumental in placing the swine industry on a sounder basis through the confidence that has been established in the efficiency of serum and the knowledge that has been acquired and disseminated relative to swine disease and swine husbandry.

"The protests received from State officials, various organizations, veterinarians, and others against the reduction of the assistance furnished by the bureau in controlling hog cholera is proof of the popularity and value of the project. This is one of the factors that has lead to the decision to ask Congress for an appropriation for the coming year of an amount equal to that of last year. When we consider that this amount properly expended may be the means of saving the swine industry from 30 to 40 million dollars a year it would seem that there should be no hesitancy on the part of any one interested in the swine industry to favor such a wise investment of public funds.

"In order to continue the hog-cholera work as successfully as in the past we must have this amount. We must also have the cooperation of all interested in hog raising and marketing and I feel that the bureau can count on the support of this organization in its efforts to give assistance and protection to the swine industry.

Accredited-Herd Work Progresses.

"The almost unanimous support which tuberculosis-eradication work is receiving from live-stock owners and officials makes it possible for me to announce highly satisfactory progress in the suppression of tuberculosis. From the time that tuberculosis eradication was undertaken less than three years ago under the accredited-herd plan, more than 1,000,000 tuberculin tests have been applied and the list of herds now either accredited or once tested and found to be free from the disease is about three times as large as a year ago. There are now 17,000 such herds in the United States with a large number of applications on file. With tuberculosis-eradication work there has also gone a large quantity of publicity which we believe should bring about greater attention to sanitary conditions on live-stock farms.

"From the foregoing facts you will see how the bureau is endeavoring to bring about conditions under which live-stock production and the industry in general can continue and develop.

South American Meat Industry.

"The growth of the South American meat industry, and, in fact, the meat industries of many other countries also deserves attention. With prospects for the gradual improvement in the quality of domestic meat animals and with corresponding improvement in the economy of producing dairy and poultry products, foreign competition is likely to meet considerable resistance. I feel confident also that the scientific and commercial skill which has developed stock yards, the large packing houses of this country, cold-storage facilities, and other food-handling equipment can, if properly directed, stabilize some of the economic disquietude.

"Just as there is a means of finding the cause and remedy for a specific animal ailment and a means of growing better meat animals by selecting breeding stock with the proper heredity, there must be a constructive plan for getting meat products to the consumer with less delay, reshipping, spoilage, and expense than exist this year. The solution may be a different method of merchandising; it may be merely improved organization. Perhaps the key to the problem is a tin can, glass jar, or other sealed container. But relief of any kind will mean a harvest of good will for the food-handling trade that can reduce its operating expenses to the extent that the public will receive a tangible benefit without a backfire of price that will reach the producer and discourage production. Of course, while we must not expect perfect efficiency, there should be no safe harbor in the meat industry for anyone whose methods fail to reach a fair standard of excellence. The retailer who is wasteful of his ice, careless of his accounts, and who allows meat to spoil has no more right to demand a return over his expenses than the stockman who uses a scrub bull and expects to raise steers profitably. The message, therefore, that I have brought to this meeting is a request that you consider sincerely whether the preparation and distribution of meat products can not be improved in a manner and in the spirit that producers are endeavoring to better the production of the raw material.

"Last year, according to our records, the per capita consumption of meat declined about 8 pounds from that of 1918, and became considerably less than the average consumption before the war. While no definite conclusions and no great anxiety are justifiable from the experience of a single year, there would be an unfortunate effect upon the entire live-stock industry if the downward trend of consumption continues. I, therefore, ask your organization to lend its support to the following program for increasing the Nation's meat supply:

"1. Reduce losses from live-stock diseases especially, and also from other avoidable causes.

"2. Improve methods of breeding and feeding, thereby raising the dressing percentage of carcasses so there will be more and better meat from a given weight of carcass.

"3. Determine and remove causes of runty and unthrifty stock, thereby obtaining greater uniformity.

"4. Endeavor to regain normal consumption of meats and possibly increase it by bringing about a plane of retail prices that will be a relief to the consuming public and which may confidently be regarded as free from unnecessary costs of distribution.

"In general, use the technical skill which has built up the live-stock and packing industry to solve some of the newer problems that now exist."

WARNS HOUSEWIVES AGAINST USE OF CANNING COMPOUNDS

The United States Department of Agriculture warns housewives against the use of any preservative powder or canning compound in home canning. Their use encourages careless and uncleanly work, and in large amounts they may have serious effects upon digestion and health. It is entirely practicable to put up fruits and vegetables so that they will keep indefinitely by processing the products with heat. There is no reason for risk by the use of canning powders.

Boric or salicylic acid is the basis of most canning compounds on the market to-day. The directions on the packages usually call for one teaspoon of the compound to each quart of fruit or vegetable. The use of boric and salicylic acid, since they may be harmful to health, is regarded by the Department of Agriculture as a violation of the Federal Food and Drugs Act. The laws of many States also prohibit the sale of foods containing boric or salicylic acid.

Weekly News Letter

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COLLEGES AID IN TEACHING GRAIN GRADES AND MARKETS

Columbia University has recently been added to the number of colleges giving instruction in grain grading and marketing. The United States Department of Agriculture, charged with the administration of the grain standards act, is keenly interested in having such instruction made a part of college curricula, particularly of agricultural colleges, and to-day there are 20 colleges where students study grain handling.

At New York City the local Federal Grain Supervision Office is giving active assistance to Columbia University in outlining and presenting the grain grading course to be given, and similar help is being accorded other colleges by Federal Grain Supervision officials located in 33 districts throughout the United States. The department is also preparing sets of eight type trays illustrating the various grading factors of shelled corn, wheat, and oats, to be lent to colleges teaching grain grading under the Federal standards.

Last fall a conference of teachers of farm crops in a number of agricultural colleges with Federal Grain Supervision officials was held at Chicago, where the entire grain situation was discussed with a view to equipping the instructors with information that would enable them to formulate courses of study in grain grading and marketing. Every phase of the grain trade was covered and a report of the conference prepared for distribution among the various colleges interested.

Grain grading demonstrations covering a period of from 1 to 12 days have been given by United States Department of Agriculture experts before students of agricultural colleges in 17 States. The department is prepared to assist colleges in every possible way in furnishing them with authoritative information regarding the objects of the grain standards act and the practical application of its provisions.

QUARANTINES 16 MORE TOWNS AGAINST CORN BORER SPREAD

Quarantine against the spread of the European corn borer has been extended to 16 additional towns in the States of New York, Massachusetts, and New Hampshire, which have been invaded by this pest since August 15, it was announced at the United States Department of Agriculture to-day. The towns are:

Massachusetts: Lakeville, Plymouth County, and Medfield, Norfolk County.

New Hampshire: Hampton and North Hampton, Rockingham County.

New York: Amherst, East Hamburg, and West Seneca, Erie County; Mayfield, Fulton County; Charleston, Montgomery County; Poestenkill, East Greenbush, and Schaghticoke, Rensselaer County; Duanesburg, Schenectady County; and Middleburg, Schoharie, and Wright, Schoharie County.

By previous orders of the Secretary of Agriculture other towns in these States are under quarantine to prevent this pest from making its way to other parts of the United States, particularly the corn belt. Recently the existence of the pest was discovered in Canada in an area extending from Niagara Falls to St. Thomas, and every precaution is being taken by officials of the United States Department of Agriculture to guard against this new source of infection.

WANTS PREDATORY ANIMALS SPARED TO EXERCISE DOGS

It's hard to please everybody. Even efficiency has its drawbacks. Now comes a complaint from a rancher at Antelope, Oreg., that the Government hunters in that section of the country are so effectively carrying on their warfare against predatory animals—coyotes, particularly—that he is put to it to find exercise for the dogs.

Officials of the Bureau of Biological Survey, United States Department of Agriculture, who have charge of the work of making the ranges free from destructive animals, look upon this knock as a particularly good boost, in view of the fact that this part of the country is considered especially infested with such enemies. It is an instance of the notable work being done by the bureau's corps of hunters and trappers in the important live-stock ranges of the West, where mountain lions, bobcats, bears, wolves, and coyotes have been able to maintain their numbers practically undiminished in spite of the best efforts of the settlers and ranchers.

There are between 400 and 500 of these skilled hunters. Last year they captured about 32,000 predatory animals and killed at least that many more by poisoning operations. As an example of the destruction done by predatory animals: A Texas ranch owner declared that in less than three months he lost nearly 300 sheep, worth $3,200, through depredations of six coyotes, which later were killed by Government hunters.

PINE BEETLE INFLICTS BIG DAMAGE TO SOUTHERN TREES

Approximately $20,000,000 damage was inflicted by the southern pine beetle in its attack on southern timber forests during two decades, according to investigations made by the United States Department of Agriculture concerning destruction caused by insect forest pests. Added to this damage is that of the black and the red turpentine beetle.

The hickory-bark beetle is found to be doing extensive damage in the northern tier of States from Wisconsin to Vermont and southward through the Atlantic States to central Georgia.

The department has issued three bulletins of particular interest to farmers who have hickory or pine trees on their lands. They are: "The Dying Hickory Trees, Cause and Remedy," Bureau of Entomology Circular 144; "The Dying Pine Trees, Cause and Remedy," Farmer's Bulletin 474; and "The Black Turpentine Beetle and Red Turpentine Beetle," reprint from Bulletin 83, Part I, Bureau of Entomology.

The department is urging farmers who use the slack time of late fall and early winter in getting in firewood to select trees that have been infested with insect pests.

GUARD AGAINST CHINCH BUG.

Chinch bugs have been especially active in the corn crop of eastern Missouri this year, according to crop reports received by the United States Department of Agriculture. Ravages have been extensive also in some portions of southern Illinois. The department has several bulletins describing the chinch bug and methods of exterminating it. The bug exacts a toll of several million dollars each year through the destruction of corn and wheat crops.

Agriculture Forms Basis for Business, Secretary Meredith Tells Rotary Clubs

Edwin T. Meredith, Secretary of Agriculture, delivered the following address before the Rotary Clubs of New England at Springfield, Mass., September 24:

"I am genuinely glad of this opportunity to meet representative business men of New England and to talk to you about the largest industry in the world—the industry of agriculture. Too many business men, I am afraid, have failed to appreciate fully the importance of agriculture or their dependence upon it. This has resulted in many instances in lack of sympathetic understanding of the farmer's problems and of the difficulties confronting him, not only in producing his crops or live stock, but also in the marketing of his products. Agriculture furnishes the basis of much of the business of the country. There are many industries which are entirely dependent upon it, such as the manufacturer of farm implements and machinery, the packing houses, the grain merchants, and many others; and farm products, of course, play a large part in transportation. Neither the business man nor the farmer, therefore, can be genuinely and permanently prosperous without the good will and the material aid of the other. Whenever a business man does anything toward making the agriculture of his section more profitable to the farmers, he does something which will help his own business, because there is not in the United States any business center that could continue to prosper independently of the farming communities surrounding it.

To Tell Story of Agriculture.

"Recognizing these facts, I have made it a part of my work to tell the story of agriculture to the business men of America and to point out to them some fundamental points of contact between the two. I regard it as a real privilege, therefore, to speak to the members of the Rotary Clubs, an organization unique in its make-up, comprising all classes of business men and presumably men who are leaders in their communities, since undoubtedly the Rotarians seek to bring into their councils the most representative thought of all the diverse lines of activity that go to make up a business community.

"I would like to impress you, at the outset, with the fact that in the equation between American agriculture and American business there is just about as much weight on one end of the scales as on the other. The farmers of the United States could, with their live stock and crops for one year, buy all the railroads in the United States, together with all the rolling stock and other equipment. They could sell their farms along with their crops and live stock and buy, in addition to all the railroads, all the manufacturing establishments, all the mines, and all the quarries in the United States. With the income from their live stock and crops for a single year, they could pay practically the entire national debt. In other words, agriculture represents a permanent investment of eighty billions of dollars, and its output last year was valued at twenty-five billions. The greater part of the output of this enormous enterprise comes almost to the door of American business. The manufacturers receive from it, directly or indirectly, the materials that go to make up their finished products. Bankers employ their deposits in facilitating the exchange of products between the two. The railroads and other carriers, including the comparatively new and important enterprise of motor transportation, have as their principal purpose the carrying of commodities from one to the other. The merchant has on his shelves many of the products of the farm and, with many of them, the farmer is the largest customer.

Vitally Affects New England.

"In order to bring home to you the importance of this great industry, let me remind you of some of the ways in which agriculture vitally affects New England. This section naturally and properly is a manufacturing region. Your industrial output by the census of 1914 was worth more than one and one-quarter billion dollars. But that output was produced by 80 per cent of your population. A little less than 17 per cent of the population of New England was engaged in agriculture, and yet it produced more than one-third as much wealth as the 80 per cent engaged in manufacture. Last year agriculture produced in the New England States crops and live-stock products valued at about one-half a billion dollars, a source of wealth and well-being not to be neglected. Though manufacturing is your principal industry, and though some people look upon the agriculture of New England as in a state of decline, I mention these facts to impress upon you the magnitude and importance of agriculture as an industry in this section.

"Yet it is well for you to bear in mind, when you think of the wonderful industrial and commercial development of the Atlantic Seaboard States, that west of you lies an empire which surpasses in area, in population, in natural resources, and in the annual creation of wealth, anything that the great industrial centers of the East can show. New England must draw upon the agricultural products of those regions to sustain its wonderful manufacturing industries. To provide the population of New England with sufficient wheat, on the basis of the normal average per capita consumption of 5½ bushels, would require about 40,000,000 bushels a year. New England produced in 1919 only about 500,000 bushels, barely sufficient to feed its population for a single week. For the other 51 weeks of the year New England necessarily must rely upon a steady flow of wheat and flour from the States of surplus production.

Draws Labor from the Farms.

"With the increased population in your manufacturing centers, the increased cost of transportation from distant States, and the ever-present danger of food shortage from transportation difficulties, the necessity for increased local production and supply will grow more insistent, and must emphasize to you the wisdom of a generous policy toward agricultural producers, in order not only to maintain your agriculture, but to develop all its latent possibilities.

"The higher wages paid in industries, the shorter hours, the conveniences and other advantages of city life, have drained the farm population, especially in the vicinity of large manufacturing centers, almost to the danger point. The supply of farm labor was 37 per cent below estimated requirements last spring. The acreage to be harvested in food crops this season is about 11 per cent less than last year. Only a favorable season and much more than eight hours a day labor by farmers and their families have made possible the abundant crops this year. A continued reduction of the farm labor supply through conditions which make it impossible for farmers to compete on equal terms with other industries, in conjunction with an unfavorable season, will result in reduced production of many crops, which will naturally bring about high prices of food in cities and add greatly to your industrial problems.

"It should be borne in mind that after the season has progressed beyond plant-

(*Continued on page 12.*)

"Rat Days" Beneficial in Fighting Pest—Constant Warfare, However, Necessary

Spasmodic rat extermination campaigns are of course beneficial, but to secure lasting results constant warfare must be waged against the rat, say specialists of the Bureau of Biological Survey, United States Department of Agriculture. The necessity for this is plain in the fact that rats begin to breed at three months and have from 6 to 10 litters a year, with an average of 10 young to each litter.

Riddance Possible.

Specialists of the Department of Agriculture for years have made extensive studies of rats and methods of exterminating them. No matter how badly a house may be infested with rats, these experts maintain, the use of the methods perfected by them will absolutely, and without doubt, rid the house of the rodents.

Throughout the United States health authorities are advocating the use of these methods and gratifying results are being secured. Thus Kansas has designated a special "rat day." Cincinnati is spending thousands of dollars in a rat campaign, and similar movements are being conducted at Norfolk, along the Gulf Coast, and in many other cities. In addition the bureau is constantly giving advice to hundreds of correspondents.

"Rat-proofing" of buildings is the basic step in rat extermination. Food should be protected and sanitary methods employed for disposal of waste food. Where rats may die in the walls poisoning is not recommended, but where this condition can not result barium carbonate worked into almost any kind of food is the poison to use. Snap traps, often called "guillotine traps," are the most effective in trapping. The traps should be placed in every part of the house that rats frequent. One or two traps are not enough. The traps should be baited with fresh meats, seeds, nuts, vegetables, fruit, or any other food.

The bureau will be glad to advise any one regarding the correction of any rat condition, upon receipt of full details. Letters should be addressed to the Bureau of Biological Survey, United States Department of Agriculture, Washington, D. C.

SELLS MANY AGRICULTURAL FILMS TO STATE AGENCIES

Numerous sales of United States Department of Agriculture films have been made to agricultural colleges, extension divisions, and other organizations cooperating with the Federal department. Constant requests for the films, which picturize a wide range of agricultural activities, are being received from many quarters, and the number of sales is increasing rapidly, under an arrangement by which the purchaser pays the contract charge of a commercial manufacturer.

The film library of the department, which now includes 112 agricultural subjects, offers an opportunity for State and local agricultural organizations and agencies to establish or add to their stocks of motion pictures. Establishment of film libraries in the States will go far, according to men in charge of motion-picture work for the Federal department, toward working out efficient and inexpensive methods of motion-picture distribution among agricultural agencies.

The latest purchaser among the State colleges is Washington State, which bought a copy of the film, "Selecting a Laying Hen." The picture will be circulated throughout the State, and poultry specialists expect it to be beneficial in demonstrating good methods of culling poultry. Other sales have been made to the director of agricultural extension in Louisiana, who bought copies of "Home Demonstration Agent," "Government Poultry Farm," and "Embryology of the Egg." The North Carolina extension director recently purchased "Apples and the County Agent."

STORAGE DISEASES TAKE BIG ANNUAL TOLL OF APPLE CROP

Storage diseases take a heavy annual toll on the harvested crop of apples, greatly reducing an important food supply and increasing the cost and uncertainty of marketing operations. The responsibility for this loss may lie with the orchardist, the transportation company, the dealer, or the storage management, say specialists of the Bureau of Plant Industry of the United States Department of Agriculture, in Farmers' Bulletin 1160, Diseases of Apples in Storage, now available for general distribution.

The diseases may be due to the work of a parasite or to the direct action of unfavorable conditions upon the fruit itself. Diseases like scab and certain rots that are definitely traceable to the action of particular fungi are called parasitic diseases, while bitter-pit, watercore, and scald are known to be wholly due to abnormal physiological conditions in the fruit itself, and are called nonparasitic or physiological diseases. Both these classes of diseases can be prevented largely by proper methods of growing and handling the fruit, but each has its own peculiar laws of behavior upon which the requirements for its control must be based.

Delay in warm packing sheds or cars shortens the natural life of apples and greatly increases their tendency to rots and to scald. Filling the storage rooms so rapidly that cold-storage temperatures can not be maintained has a similar bad effect. Apple rots are slow to start at a temperature of 32° F., but if a beginning has been made at a higher temperature they proceed much more rapidly.

Ventilation is as important as low temperature in the prevention of scald. Apples that receive good aeration when delays occur in handling them do not have their tendency to scald increased by the delay. [Any ventilation of the storage room that results in an actual renewal of the air within the package is of great value in scald control.] Apples scald far less in boxes, baskets, or ventilated barrels than in the usual tight barrel. Wrapping apples in oiled wrappers furnishes the most complete protection against scald.

FINDS RAYLESS GOLDENROD POISONOUS TO LIVE STOCK

Following investigations of a live-stock ailment commonly known as "alkali disease" or "milk sickness," the United States Department of Agriculture has found the rayless goldenrod to be the probable cause. Experimental work with this plant produced symptoms corresponding to those characteristic of this disease. Investigations by the department included regions in New Mexico, Texas, and Arizona where "alkali disease" has caused many fatalities among domestic animals. The rayless goldenrod is known to botanists as *Isocoma wrightii;* in Arizona cattlemen sometimes call it "jimmy weed."

Dr. C. D. Marsh, poisonous plants specialist for the Bureau of Animal Industry, has found the plant to be poisonous to cattle, sheep, and horses. Among cattle, typical symptoms are drowsiness and weakness. If the animals become excited or attempt to travel far their motions become jerky and their legs seem to give way. Some are unable to get up after falling. The fattest cattle are usu-

ally the ones first affected. Considerable numbers of work horses and stock horses have died in the regions mentioned from influences now attributed to the rayless goldenrod. Horses frequently died in from one to three days after showing symptoms of poison. Sheep show symptoms similar to those of cattle and horses, and it is also likely that burros are poisoned by the same plant.

The rayless goldenrod is a stout perennial herb commonly growing about 2 feet high, though under favorable circumstances it may reach a height of 4 feet or more. The heads are numerous and have yellow flowers. It grows generally on alkaline soil, and very luxuriously on the banks of irrigation ditches. In some localities the rayless goldenrod makes a thick hedge.

To prevent losses from this poisonous plant, the department points out the feasibility of eradicating it from pastures. When dug out to a depth of 2 or 3 inches it seldom reappears; this plan of eradication is practicable where the growth is not too extensive. Where plants are too numerous to be dug, reliance must be placed in moving the animals so that they can get no more of the poison and may receive an abundance of good feed. In the regions mentioned care should be taken not to force live stock to graze on scanty pasture containing the rayless goldenrod.

ALFALFA WEEVIL SPREADING.

The United States Department of Agriculture has in press a new bulletin on control of the alfalfa weevil, which made its appearance in Utah a few years ago and has been spreading at the rate of about 10 miles a year. Reports received at the department in the last few weeks show that the weevil has been discovered in Reno, Nev.; Tippett, Nev.; Castledale, Utah; Twin Falls, Idaho, and in the Malheur Valley of Oregon.

No great amount of damage has been done this year, but every effort is being made to intercept the progress of the new pest before it can reach the large alfalfa areas.

Getting a knowledge of accounting principles is the first and most important step toward establishing an accounting system suited to one's individual needs. There are many degrees in farm accounting, from the simple to the extended and complex. Farmers' Bulletin 511, copies of which may be had upon request of the United States Department of Agriculture, Washington, D. C., contains an outline of the principles of simple farm bookkeeping.

Steals Water from Irrigation Canals—Tests Show Soil Responsible for Loss

That water is stolen from irrigation canals by the soil in much the same way that a lump of sugar takes up water from a glass when a corner of the lump is held in the water—by the force known as capillary attraction—has been shown by a series of experiments recently conducted by the United States Department of Agriculture. It has long been observed that unlined reservoirs on irrigation canals lose more water than can be accounted for by direct percolation and evaporation, and a desire to study the cause of this additional loss was one of the reasons for making this investigation.

Accurate information has also been lacking as to how water applied in irrigation is distributed through the soil. Many perplexities are cleared up by tests conducted by the United States Department of Agriculture, in which columns of soil contained in especially devised flumes, each with one plate-glass side, were used to observe the rate at which moisture traveled.

It was found that where soil is in contact with a body of free water it will take up water with remarkable rapidity until the soil approaches saturation. The vertical distance through which water can be lifted by capillarity is very limited, however, not exceeding 3 or 4 feet in most soils. It was also found that while water will move very rapidly from a body of free water to a dry soil the movement from a wet soil to a dry soil is very gradual.

A "Capillary Siphon."

In the case of flumes inclined downward water drawn into the soil column by capillarity appeared, after a few days, as free water dripping from the flume, thus establishing a "capillary siphon." This indicates that where a canal is located along a side hill water may be drawn out by capillarity continuously and may result in the water-logging of land farther down. Such a condition might be expected where there is a topsoil of rather high capillary power and an impervious subsoil, both sloping downward from the canal at an angle of 15 degrees or more. If under these conditions there were a sudden change in the slope of the ground toward the horizontal, a swampy condition would be likely to result. Such conditions should be avoided, so far as possible, in the location of canals.

ARMY AIMS TO TRIPLE HORSE BREEDING SERVICE FOR 1921

(*Continued from page 2.*)

sired by Government stallions. Some of these latter animals are very valuable. For example, the Government owns and offers for the use of farmers and stockmen the celebrated stallion Danger Rock, by the famous Rock Sand, out of Delusion; and Swing Loose, by Broomstick, out of Courage. The get of some of the Government stallions are being held at very high prices. For instance, Down East, by Yankee, and Silver Crest, by Black Du, could not be bought for $10,000 each. Many youngsters bred from Government stock have been sold from $1,000 to $5,000 each.

With so much breeding activity in the Army it has been necessary to establish vocational schools for soldiers who are fond of animals and who wish to learn how to handle and care for them. Every opportunity is offered to recruits who enlist for occupational training to select the various courses in Army schools which pertain to breeding and animal husbandry.

There are special courses at Camp Lee, Va., Camp Gordon, Ga., Camp Travis, Tex., Camp Funston, Kans., Camp Pike, Ill., Camp Grant, Ill., Fort Keogh, Mont., Fort Reno, Okla., Fort Robinson, Nebr., and Front Royal, Va. Here a young man can take any one of a dozen courses which pertain to horses, mules, and other farm animals. When the soldier is honorably discharged he has a first-class training in the scientific side of their care, usage, and breeding. He can also learn horseshoeing and general smithy work.

The War Department wishes to interest a great number of men who raise horseflesh in this new plan. All breeders of animals who wish further particulars are invited to address the Remount Service Office of the Quartermaster General, Washington, D. C.

Special reports, received by the Bureau of Crop Estimates, United States Department of Agriculture, show that in the fall-oat area, embracing the States from Maryland, West Virginia, Kentucky, Arkansas, and Oklahoma southward, about 45 per cent of the oats grown are fall sown. The States in which more than 60 per cent of the acreage is sown in the fall are North Carolina, Georgia, Florida, Alabama, Mississippi, and Louisiana.

Cotton Growers See Need for Adequate Warehousing Facilities for Product

In many parts of the cotton belt growers are rapidly awakening to the importance of warehouses as a fundamental element in any scheme of marketing, and arrangements are being made to secure funds through cooperative action in one form or another for the building of such warehouses, say cotton-marketing experts of the Bureau of Markets, United States Department of Agriculture.

States Extending Aid.

In some instances the States themselves are taking official cognizance of the need for warehouses and extending financial aid for their construction. The State of Louisiana owns and operates a large modern warehouse at New Orleans. North Carolina has provided a fund from which loans can be made for the building of warehouses by levying a small assessment against each bale of cotton at the gin. In South Carolina it has been proposed that financial aid for building warehouses be extended through the issuance of bonds by the State.

According to the bureau's experts warehouses should be constructed under the supervision of competent architects or engineers and after consultation with insurance underwriters; that they should be equipped with automatic sprinklers to secure reduced insurance rates; and that the structures have classing, sample, and display rooms, where buyers and sellers may meet under favorable conditions for discussion of values and for making sales and purchases. The Bureau of Markets has worked out a number of designs for cotton warehouses and will gladly render every assistance to those contemplating the building of such structures.

TO CUT DOWN MILK LOSSES BY BETTER SHIPPING METHODS

To develop better methods for handling and shipping milk from the farms to the city market is the object of an investigation of practices in various milk plants, which is being made by the Dairy Division of the United States Department of Agriculture. Milk losses during shipment have a marked effect upon the price that the consumer must pay for the product, and upon the price that the farmer receives for the product. The losses are of two kinds; those resulting from milk souring in transit, and those from theft, spoilage, and leakage. Both are believed to be avoidable if the farmer, country dealer, and city dealer will work together.

Dealers are being asked to give information on various subjects, such as the methods used for transporting milk from the farm to the dealer, the protection provided for milk while in transit between the dealer and the city market, and the relative efficiency of different types of refrigerator cars.

HIGHER ESTIMATE FOR SUGAR MILL.

Under existing conditions the cost of constructing a beet sugar mill of 500-ton capacity would be approximately $1,000,000, instead tof $750,000, as stated in a recent issue of the Weekly News Letter. This estimate is made by specialists of the United States Department of Agriculture, who have received many recent requests from beet growers for information on this subject.

NEW INSECT PEST THREATENS CROP DESTRUCTION IN SOUTH

(*Continued from page 1.*)

The bean ladybird is a native of North America and had about the same distribution as the Colorado potato beetle in earlier years and attracted attention at about the same time, in 1864, but its method of distribution has been quite otherwise, for whereas the potato beetle spread gradually eastward from Colorado year by year, the bean ladybird has until recently remained confined to the Southwestern States, and the present outbreak in Alabama has evidently resulted from a jump over the States intervening between Colorado and New Mexico. This outbreak has been the subject of a conference held September 20 and 21 at Birmingham, Ala., of the cotton States entomologists and others interested in southern agriculture.

Adequate records are necessary to the efficient management of any business. The farmer, to be successful, must be a business man as well as a grower of crops and producer of live stock. As a business man he should have suitable business records.

AGRICULTURE BASIS FOR BUSINESS, SAYS SECRETARY

(*Continued from page 9.*)

ing time, no power on earth can increase the production of food and raw material on farms beyond the capacity of the acreage already planted. In other words, a whole year or more is involved in the preparation of the soil and in seeding and harvesting, and, therefore, to insure that an adequate acreage is planted to provide an ample production in an average season, farm prices must be so stabilized as to hold out to the farmer a reasonable prospect that, at the close of the crop season, he will find a ready market at prices which will compensate him for his labor and investment.

Building Up Agriculture.

"I want to tell you something about the Department of Agriculture—that great institute of service—what it has done and is doing to help the farmer meet the problems facing him and also the services rendered by it to the business men and, in fact, all the people of the Nation. Through its 17 bureaus, the department is dealing with practically every phase of production, seeking to build up a permanent and profitable agriculture through the elimination of plant and animal diseases and insect pests, which cause enormous annual losses, the working out and adoption of improved methods and practices, the development and introduction of new and better yielding varieties, and in many other ways. Its Bureau of Plant Industry, for example, breeds improved strains and varieties of plants, introduces plants of possible economic value from foreign countries, tests seeds, experiments with different methods of cultivation, different combination of fertilizers and soils, and all the artificial and natural factors affecting plant growth, and especially studies plant diseases and methods of overcoming them. Its Federal Horticultural Board inspects nursery stock and plants for diseases or insects. Its Bureau of Animal Industry studies all phases of animal husbandry and especially the diseases of farm animals, their prevention and cure. It administers the animal quarantine laws and is conducting active campaigns to eliminate hog cholera, the cattle tick, and tuberculosis of animals, as well as to build up the live-stock industry of the country by organizing cow-testing associations, better-sires campaigns, and the like. Its Bureau of Entomology studies plant and animal insect pests and develops methods of extermination. Its Insecticide and Fungicide Board inspects insecticides and fungicides to insure a high standard of

purity and efficiency. Its Weather Bureau forecasts the weather, storms, freezes, and frosts, so that the farmers may take such measures as may be practicable to protect their crops, their orchards, and their live stock. Its Office of Farm Management specializes on the farm business, including cost of production, in the same way that efficiency experts specialize on business methods in other industries. It also studies various phases of country life betterment. Its Bureau of Crop Estimates estimates the acreage, growing condition, yield per acre, present and prospective production and supply of crops, and numbers of live stock on farm, bridging the gap between the decennial censuses.

Results in Dollars and Cents.

"I will not go through the whole list of bureaus, but I do want to give you a few typical items, out of a large number that could be cited, which clearly indicate the value of the work of the department—and when I speak of the Department of Agriculture I have in mind also the agricultural colleges and experiment stations in the various States which are cooperating with it in so many important directions. We spent $250,000 establishing Durum wheat in this country. The Durum wheat now produced here is worth $50,000,000 a year. We spent less than $200,000 introducing a rice and establishing the industry in California. The rice crop in that State is now worth $21,000,000 a year. We spent $40,000 introducing Egyptian cotton, breeding it up and establishing the industry in the arid regions of the Southwest. The American-Egyptian cotton crop is now worth $20,000,000 a year and is increasing every year. We discovered a serum that prevents hog cholera, and its use, as demonstrated by the department, has reduced the losses from that disease by $40,000,000 a year, but we are still losing sixty millions of dollars. We spent a few thousand dollars in introducing grain and forage sorghums that could be grown in the Southwest where corn does not succeed. Last year 125,000,000 bushels of Kafir and other grain sorghums were produced there. Does it not mean something to the business men of New England that the Department of Agriculture and other services to agriculture have been able to do these things? Has it not resulted in increasing the volume of your business? Has it not made traffic for your railroads, deposits for your banks, and furnished purchasers for the products of your factories—purchasers who have the money with which to pay? How many additional pianos, shoes, watches, firearms, etc., has New England sold because of this added or saved wealth? And, remember, the story is repeated every 12 months.

"The primary purpose of the Department of Agriculture is to improve agriculture, but agriculture is so closely dovetailed with business that whatever benefits agriculture is certain to benefit business. And the department also has made, and is continuing to make, important contributions to American industry aside from the industry of agriculture. As a matter of fact, there are many industries in the United States, now of tremendous size and importance, which grew directly out of or received considerable impetus from discoveries made in one branch of the department—the Bureau of Chemistry. The American dye industry is perhaps the most striking illustration. I shall mention just one point in the development of that industry.

Developing American Dyes.

'When the importation of chemicals from Germany was stopped by the war, a shortage of phthalic anhydride developed in this country almost immediately. This product, which is used in the manufacture of a number of important dyes and drugs, had previously been produced only in Germany and Austria. Attempts were made by manufacturers in this country to use the German process, but it was found to be costly and difficult to handle.

"Experiments then were conducted in the color laboratory of the Bureau of Chemistry to devise a new process in which air instead of mercury and sulphuric acid, which the Germans had used, could be employed. A successful method was found, and the Bureau of Chemistry cooperated with manufacturers in placing the new process on a commercial scale. As a result, we are not only producing phthalic anhydride in this country, but we are also exporting it to Switzerland in competition with German manufacturers.

"Statistics show that the difference between the cost of producing the product by the German method and the new process results in a saving of at least $700,000 per year on the basis of present production. The production, however, is increasing and, with this increase, it is expected that the cost of manufacture will be still lower by the new process. Phthalic anhydride has been sold recently in this country for 45 cents per pound, while during the war it sold as high as $7 per pound.

"It has been estimated by those who are acquainted with the phthalic anhydride market that the new process is saving enough each year to pay for the entire annual appropriation of the Bureau of Chemistry. Moreover, it has made possible the manufacture in this country of many dyes and other chemical compounds which could not have been made successfully except for the discovery of this process.

Utilizing a Waste Product.

"Corn cobs, which, from the beginning of agriculture in America until now have been a waste product, are about to become an important raw material in manufacture. Capital at various places is becoming interested in the establishment of cob-utilization plants. This is all due to a set of discoveries made in the Bureau of Chemistry, by which it was found that the entire content of the corn cob can be made into highly useful articles. From it our chemists produced a very excellent adhesive. After the high-grade adhesive is removed, a considerable quantity of a lower-grade product can be made, and the residue is practically pure cellulose, from which it is possible to manufacture a great number of commodities, including a very good quality of paper. Some valuable lime products also are recovered. After all these processes had been worked out, it was discovered that a considerable quantity of a very costly chemical—furfural—was being lost. This is now saved as a by-product, and an even larger quantity of it can be produced by redistillation of the adhesive. Before this discovery was made furfural used to sell as high as $20 a pound. Furfural is a basic intermediary in dye manufacture and, in addition, is so effective as an insecticide that it was used for that purpose even when it sold at $20 a pound.

"I might go on giving you the details of a great number of similar discoveries. Nearly all the flour-saving methods practiced during the war resulted from the use of substitutes suggested, after experiments, by the Bureau of Chemistry. That bureau also has played a very important part in the creation of the citrus by-products industry in the United States.

Preventing Dust Explosions.

"There used to be, every now and then, a mysterious explosion in a grain elevator or a mill. A great deal of property was destroyed and many lives were lost. The Bureau of Chemistry discovered that they were explosions of grain dust and began a crusade of prevention largely by demonstration and education. For a year and a half after that crusade was begun there was not a single explosion in mills reached by our men that resulted in the loss of human life and none in which the property loss was of any consequence. In spite of that great saving of life and of property,

Congress refused last year to make any appropriation for continuing the work. However, the grain corporation of the United States Food Administration recognized its value and, as an insurance measure for the protection of Government-stored grain, financed the work until a few months ago, when the grain corporation ceased operations. Congress again refused this year to make any appropriation for the work and it has now been discontinued. Some disastrous explosions have occurred since lack of funds made it necessary to abandon the project, but the educational work already done has produced some results that will be lasting. Grain-dust explosions are not likely ever again to be so frequent or so disastrous as they used to be. The same sort of service, in lesser degree, has been rendered in connection with fires in cotton gins. Methods for preventing explosions in thrashers have been worked out.

"I think, in view of its previous record, I am safe in saying that other industrial discoveries may be counted on from the Bureau of Chemistry with fair regularity. Some chemist who has seen possibilities in a factory waste product finds a way to treat the waste so that one or more valuable materials may be secured from it. But the full benefits of the discovery are not always realized. The difficulty is that of bringing about its commercial development. Unless we can offer it to the manufacturer stripped of theory and grounded on practical production, the process is likely to meet with an indifferent reception, and the business opportunity, perhaps worth millions of dollars to the people, is lost to everyone. To assist in meeting this difficulty, we have established in the Bureau of Chemistry an 'office of development work.'

The New Business Service.

"The new office is a business service. It will act as the go-between from science to industry. A force of trained engineers will take up each new project as soon as it has passed the experimental stage in the Government laboratories and attempt to develop its commercial possibilities. It offers, without fee, a service similar to that which a mining engineer performs for an investor who engages him to report on a gold mine. It will furnish reports covering everything regarding a new discovery, from the source and availability of the raw material to plans covering the nature of the machinery needed, size of the plant, capacity of plant, cost of production, and market demand for the finished material. In looking over the prospect for getting a leather substitute from a waste material, for instance, the manufacturer need not reply on his own estimates or upon the records of what the process has done on a laboratory scale. He can secure reliable quantity production figures from the office of development work.

"The office is a long step toward business efficiency. It talks the language of the investor, it knows his problems, and its officers are well in the forefront of modern industrial development. On the other hand, it helps the Government chemist himself by popularizing his process—a thing he is often unable to do for himself. Trained and specialized in the details of his profession, he is often unprepared to present his discoveries to business men who will give the country the benefit of them. This the new office will do for him through the agency of a force especially equipped for work of this sort.

"It holds itself unprejudiced, recognizing the obligation it carries to the public and to chemistry alike. Its organization is of primary interest to business, and through business it is meant to reach the public. For the present the work will be confined to discoveries made in the Bureau of Chemistry.

Why Discoveries Were Possible.

"Do you know why these discoveries are possible? It is because the Department of Agriculture has in its employ a body of trained workers—scientists of the highest order—who are devoting all their energies to serving the people of the United States. They are vitally interested in their work and they are turning out a product—service—which is just as tangible, in a certain sense, as the product of a shoe factory, for example. But the department is confronted with a very difficult situation in the matter of securing and retaining an adequate personnel, particularly for the prosecution of its research and regulatory activities. It is one of the most pressing problems now before the department, and unless something is done to furnish relief, we are threatened with a serious disintegration of the service. It is of the utmost importance that the Department of Agriculture should be in position to retain its research workers over long periods.

"From the standpoint of public service, a man once embarked upon an important line of investigation, if he is capable and efficient, should remain there for the rest of his active career, but, at the same time, the Government should see to it that he is adequately compensated for his efforts. When a man who has been working on a particular problem leaves the department he carries with him much of the information which he has secured in the progress of his work and which enriches him in experience, but which can not possibly be put on record. This means, of course, that a new man continuing the problem must, in many instances, go over a considerable part of the field already covered before he reaches the point where his predecessor left off. There was a time when relatively few of the investigators in the department sought employment elsewhere. Now the situation is vastly different.

Should Be Better Paid.

"Recently the annual turnover in the department has approached, if it has not passed, 50 per cent. Much of this turnover, of course, consists of employees other than research workers, but, counting the research workers alone, it is several times greater than it should be. Valuable men are leaving us constantly for salaries two, three, four, and even five times as much as we are able to pay them. It is not to be hoped, of course, that the department can ever meet that kind of competition, and the research workers do not expect it. As a general rule, they do not feel that the department should pay them as large salaries as they could secure in private employment, but they do feel that they should receive compensation sufficient to enable them to keep their families in reasonable comfort. Unless this is done, the department will continue to be drained of many of its most efficient workers and a serious—almost a fatal—blow will have been struck at the root of agricultural progress. Everything that is done by the Department of Agriculture, by the agricultural colleges in the various States, by the agricultural extension agencies of every kind rests, in the final analysis, on the results obtained by the research workers.

"I do not believe the people of the country fully realize the situation. In the color laboratory, the organization I mentioned as having aided so effectively in establishing an American dye industry, we have had 39 technical men since the work was begun on December 1, 1915. Only 12 of them remain. In another bureau, a man who was receiving $4,500—a large salary as salaries go in the department—accepted a position at $20,000 a year. A specialist in cotton classing who was receiving $3,000 took a position at $10,000. I could cite hundreds of similar cases in every branch of the department, but I will not undertake to do so here.

"We can not pay the kind of salaries that we should pay because of legal limitations imposed by Congress and because we have not the money. In spite of the most vigorous protest we could make, the last Congress reduced the appropriation for the Department of Agriculture

$6,000,000 below our estimated needs and $2,000,000 below the inadequate funds that were available during the preceding year. The result is not only that the foundation of agricultural progress is weakened because the services of highly trained research workers are lost but also that many vital lines of work are hampered because of the lack of adequate funds. I can not undertake to review the many reductions and curtailments that necessarily have been made all over the country, but I may refer to a few of the lines of work which are seriously affected.

"For example, we have been compelled to abandon the hog-cholera eradication work, in so far as the department is concerned, in several States, reducing from 140 to about 54 the force of trained veterinarians in the field showing farmers how to save their hogs from cholera. We have been compelled to withdraw financial support from cooperative cow-testing association work in 10 States. Many field stations engaged in investigations looking to the development of better varieties of cereal crops and to the working out of methods for controlling diseases affecting them have been closed. Stations at which problems in irrigation agriculture are studied have been abandoned at three places. The work relating to the control of insect pests has been curtailed and the scope of the market-news services conducted by the Bureau of Markets has been considerably reduced. This brief statement, I hope, will give you some indication of the situation that has confronted the department because of the lack of adequate provision for the prosecution of its activities. A few of the more important projects here in New England that we have been compelled to abandon or curtail because of the cut in appropriations might be of particular interest to you:

"1. It was necessary to abandon all the cooperative dairy extension work which last year was conducted in New Hampshire, Vermont, Connecticut, and Rhode Island.

"2. Investigations carried on by the Bureau of Plant Industry in the control of corn root and stalk rot—a disease found in New England, being especially prevalent on sweet-corn varieties in Connecticut—have been restricted in scope.

"3. Experiments in the improvement of field corn adapted for culture in New England, especially in Connecticut and Massachusetts, have been curtailed.

"4. Plans for investigating the best methods of maintaining and reproducing forests and of increasing their yields in the New England States, including special studies in the White Mountain National Forest, have been abandoned, which means that nothing can be done in the way of working out improved methods for the production of pulpwood, a large part of the present supply of which comes from this section.

"5. The proposed extension of investigations and demonstrations in the proper methods of handling, packing, shipping, and storing poultry, eggs, and fish, to prevent spoilage, can not be carried into effect.

"6. Decreased appropriations for soil-survey work mean that one less county each in Maine, New Hampshire, Vermont, and Massachusetts will be included in the department's operations for this year.

"7. The special reports on fruit crops, which in 1919 had a value, for the entire New England section, of over $14,000,000, have been discontinued; as have also the special reports on the tobacco crops of Massachusetts and Connecticut, having a total annual value of over $35,000,000, and the special reports on the important truck industry of the Connecticut Valley.

"8. The services of a food-products inspector of the Bureau of Markets at Boston have been withdrawn, thus depriving out-of-town applicants of desired information as to the conditions of perishable farm products received at that market. This suspension of work also will affect the Providence, R. I., market, which has hitherto been served from Boston.

Business Will Feel Effects.

"The business of the country may not yet have felt to any great extent the effect of the deplorable dissipation of talent that is taking place in the Department of Agriculture to-day and the consequent slowing up of the work, but it will be felt very keenly at no distant date unless conditions are improved. A situation far-reaching in its consequences to industry and commerce is certain to result. I can not believe for a moment that the people of the country will permit the present situation to exist indefinitely. I have faith in the common sense of the business men of the United States and I am convinced that they will not fail to see how their interest lies in this matter. I have no doubt that, when they are apprised of the facts, they will see to it that the Department of Agriculture receives adequate financial support, that it is placed in position to pay reasonable compensation to its earnest and efficient workers, and that they are otherwise equipped to render effective service to the farmers of America and to the Nation as a whole.

"Before I close there is one fundamental fact that I would like especially to emphasize, and that is the farmer must receive adequate prices for his products, prices which will enable him to continue to produce, to secure a reasonable return for his efforts, and to maintain a satisfactory standard of living for himself and for his family. There may be people who think that only the farmer is adversely affected if he fails to secure adequate prices. That attitude reminds me of a story of an old lawyer-planter in the South before the Civil War. He had a large plantation near the town in which he lived and the large number of negroes on it were left principally to their own devices. One day when the old gentleman had no case on the docket he rode out to his farm and found all the negroes loafing around the barn—nobody at work. He climbed into a horse trough and made them a speech and told them several pretty stories. Then he concluded: 'I see that you all have decided not to raise any crops on this plantation. Well, all right. It never did amount to much anyhow, but I claim to have just as many rights as you have. I'm going back to town and stop practicing law and then you all will starve to death just the same as I do.'

If the Farmer Stops Producing.

"Reversing that, it applies to this situation. If the farmer stops producing he will suffer, of course, but the manufacturer and the merchant and the banker will suffer just as severely, and possibly more so. And the farmer will not keep on producing adequately unless he receives fair compensation for his efforts—unless he can maintain his family in approximately the same degree of comfort that the city family enjoys. Every business man, of course, is interested in keeping the farmer on the farm and in having the farm operated to its reasonable capacity, turning as much as possible into the channels of trade, manufacture, and transportation, and this means, of course, that every business man should be vitally interested in seeing that the farmer gets fair treatment in the marketing of his products.

"In this connection, you may be interested to know that it recently became necessary for me to exercise the authority vested in the Secretary of Agriculture under the food-control law by declaring unfair and discriminatory certain rates charged by live-stock commission men on cooperative shipments of live stock. The organization bringing the complaint charged that the difference between rates for single and plural ownership cars was made for the purpose of discouraging the cooperative marketing of live stock by farm organizations. Now, the commission man is entitled to a higher rate for selling a carload of stock owned by several men than for a carload owned by one man, but the difference should be the cost of the additional weighing and accounting required in the case of a plural own-

ership car. The evidence showed, however, that this was not the case, the amount of the charge being determined not by the number of owners but by the number of live stock in the car. Not only did it seem that the method of determining the charge was unjust, but the increased charge for plural-ownership cars over single-ownership cars was, in the opinion of the department, higher than could be justified.

"At the same time, the commission men at the principal stockyards of the country were attempting to put into effect a schedule of increased commission rates on the sale of live stock, whether the shipment was owned by one or several men. The plural-ownership car, however, had to pay both the increased rates and the unreasonably high additional rate for plural ownership. The Bureau of Markets of the department is charged with the task of aiding the farmer in his marketing problems, and it became my duty in the circumstances, acting upon the recommendation of the bureau, to declare both these rates unreasonable and discriminatory, to set them aside and fix a schedule of charges fair alike to the shipper and the commission man. The order issued by me has been challenged by the commission men and is now being tested out in the courts.

Marketing Formerly Neglected.

"Until relatively recently the marketing half of the problem of farming received very little attention in any organized way. Even the United States Department of Agriculture had gone on for a great many years investigating nearly every problem of production but paying scant attention to the methods by which the products were to reach a market and be sold in such way as to provide a profit for the producer.

"During the past eight years, however, there has been organized and developed a Bureau of Markets, which is now one of the largest and most important of the 17 great divisions of the Department of Agriculture. The bureau studies methods of preserving fruits and vegetables in transit and storage and of preventing the waste which frequently occurs as the result of improper methods of packing and storing. It establishes market grades and standards for fruits and vegetables. It assists in dealing with problems involved in cooperative purchasing and marketing, in the foreign marketing of agricultural commodities, and in improved business practices for marketing organizations. In a large way, it concerns itself with grain standardization, handling, and transportation, cotton handling and marketing, the marketing of cotton seed and its products, the determination of cotton standards, and the supervision of stock yards and live-stock dealers. It is charged with the enforcement of the United States Grain Standards Act, the Cotton Futures Act, the Federal Warehouse Act, and the Standard Container Act. Generally speaking, it is engaged in all the lines of work that will, in time, make easier and more economical the distribution of products from the farmer to the consumer.

Lack of Funds Hampers Work.

"The value of the work of the bureau can not be doubted, but Congress reduced its appropriation by nearly $270,000. This has made it necessary to curtail most of its activities, which is most unfortunate because it is rendering a service that is yielding valuable returns to farmers, business men, and consumers. In my opinion, such an organization is entitled to adequate financial support in order that it may properly discharge its great responsibilities to the public. There are twelve divisions in the Bureau of Markets having to do with live stock, grain, cotton, fruit, etc. To-day seven of these divisions are without a chief because we can not find competent men to head them for the salaries we are authorized to pay.

"Possibly you have said, and are saying, 'I'm interested in agriculture—I've always been.' But individual interest is not enough. You owe it to yourselves as well as to the country to take an organized interest in it. Every business organization ought to appoint a committee to devise ways and means of making sure that farmers in the surrounding territory have free, open, and competitive facilities for marketing their products in the cities, and that your agricultural colleges and the Department of Agriculture receive adequate support to properly serve this great industry. If the Rotary inaugurates it, it is freed from any possible charge of special interest. It becomes at the outset the effort of the entire business community for the betterment of the community, and will continue so, and there is no better time to begin such a movement than now. If a bill is pending in your legislature, for instance, that is inimical to agriculture, it should have the spotlight of publicity turned on it just as a vicious franchise bill would have. If the farmers are making an effort to secure some constructive legislation it should be discussed in your meetings and in the daily press just as a meritorious public-service measure would be. You ought to see that these things are done, not alone because it is a matter of even-handed justice, not alone because the prosperity of the Nation depends upon the agriculture of the country, but because the prosperity of your cities depends upon the agriculture outside their corporation limits.

"I do not believe the editorial columns of your papers are devoted so largely to matters other than agriculture because of any lack of interest in agriculture, but rather because they are closer to business. The business men suggest and expect discussion of matters having to do with business. It is not unfair of them, and I am not suggesting any undue influence. I only wish to point out that many times the farmers are not in position to get their views fully before the public or effectively to protect their interests. Consider if, in your own communities, you can not well scan every bill, every proposal, every situation, with a view to learn whether agriculture would be affected adversely by it, and, if so, discuss it in your clubs; or, if it is a reasonable, just aid to agriculture, give it your support—otherwise it may not receive proper consideration. I hope, therefore, that when you gentlemen go back home you will not let a single luncheon pass without some discussion as to how you can help agriculture, the great underlying industry of America, the foundation upon which all else rests."

GROW FRIENDLY PARASITES TO HELP COMBAT BAGWORM

Friendly parasites which will help farmers combat the bagworm, a pest injurious to shade trees, hedges, and lawns, are being cultivated by the United States Department of Agriculture, which has issued a bulletin telling of the pest and how to fight it.

The bagworm is more limited in territory than the tent caterpillar, but its curious habit of crawling about on the infested trees and lawns in a baglike case, in the shelter of which it undergoes all its transformations. When the pest has finished its work it leaves the bag attached to its victim to tell of its ravages.

The bagworm gets its name from its habit of spinning a cocoon like the tussock moth and fall webworm, which it somewhat resembles in its activities, but in States south of New York it has given a good deal of trouble.

There are a number of parasites which make life difficult for the bagworm, and the department has developed methods of encouraging these parasites by gathering up large clusters of growth infested with bagworms and placing them in barrels, with a foundation stock of parasites. Holes are left for the parasites to escape when they have reached the proper stage.

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MOTOR TRUCKS ON CORN-BELT FARMS BELIEVED PROFITABLE

"Saving Time" Greatest Advantage, Say Nine-Tenths of Owners Questioned.

Department Summarizes Experience of 831 Owners in Corn Belt—Reports Indicate Trucks Have Not Reduced Expense to Any Great Extent on Most Farms There.

Summarizing the experience of 831 corn-belt farmers who own motor trucks, the United States Department of Agriculture found that, in the opinion of nine-tenths of these men, the greatest advantage in owning a motor truck is "saving time," in the opinion of three-fourths of them the greatest disadvantage is "poor roads," and 91 per cent believe that their trucks will turn out to be a profitable investment.

The reports, however, indicate that on most of these farms the truck has not reduced expense to any great extent, and that it supplements rather than replaces work stock and other equipment.

Cost of Operating Trucks.

On the average these trucks travel 2,777 miles per year, and the cost of operation is between 16½ cents and 17 cents per mile, making the total annual cost from $460 to $470. Each truck displaces an average of 1.2 head of work stock. With the cost of keeping a horse a year in the corn belt around $200, the reduction in expense for this item is in the neighborhood of $240 per farm. For all farms the average amount of hired help saved by the trucks is $163. On most farms these are the only two items of direct reduction in expense which can be credited to the truck, and on the average they amount to $60 or $70 less than the total cost of operating it.

To offset this added cost, custom hauling done with the trucks amounts to about $50 per year for all farms, leaving only something like $10 or $20 annual net expense which must be more than balanced by the saving of time of the owner and members of the family, the ability to get crops and live stock to market in better condition or at better time, and other benefits which are not directly measurable in dollars and cents, if the average truck is to be a profitable investment.

It must be remembered that most of these farms where trucks are owned are larger than the average, and are located at a considerable distance from market.

The investigation was made during the past winter and spring. Farmer truck owners in Indiana, Illinois, Missouri, Iowa, southern Wisconsin, southern Minnesota, southeastern South Dakota, eastern Nebraska, and eastern Kansas, who raise corn as one of their principal crops, and who practice the general grain and live-stock farming characteristic of the corn belt reported to the department the use they make of their trucks, the cost of operating them, the advantages and disadvantages of trucks for farm use, and other related information.

A study of the reports of 831 of these farmers has just been completed by the Division of Rural Engineering of the Bureau of Public Roads and the Office of Farm Management and Farm Economics.

Important Facts Revealed.

Some of the important facts revealed by the investigation are:

The average size of the farms is 346 acres and their average distance from market is 8 miles.

Only 14 per cent of them are less than 5 miles from market, and 29 per cent are 15 miles or more from market.

A little over one-fourth of these men have changed their markets, for at least

(*Continued on page 8.*)

PROTECTION FOR FUR BEARERS.

With the decrease in far-bearing animals, due to increased demand, laws relating to hunting and trapping are becoming more strict in the various States and Provinces. The United States Department of Agriculture has prepared a new summary of the laws on this subject in the United States, Canada, and Newfoundland. It covers hunting, trapping, open seasons, propagation, and bounties, and will be sent on request for Farmers' Bulletin No. 1165.

NEW "MARKETGRAM" SERVICE TO SUMMARIZE MARKET NEWS

Makes Information Available to Producers, Dealers, and General Public.

Presents Briefly and Concisely the Trend of Market Conditions Regarding Live Stock and Meats, Grain, Cotton, Vegetables, and Other Farm Products.

With accurate and unbiased market information a prerequisite of any reorganization of the machinery for marketing farm products, the Bureau of Markets, United States Department of Agriculture, is doing everything within its power to make such information available to producers, dealers, and the general public, and announces that beginning October 1 it will issue "Marketgrams" on Mondays, Wednesdays, and Fridays, summarizing the market news at the Nation's principal markets for the preceding seven days. A weekly "Marketgram" will be issued on Saturday, also, to cover the calendar week.

Gives Trend of Markets.

The "Marketgrams" are intended to present briefly and concisely the trend of market conditions with regard to live stock and meats, grain, cotton, butter and cheese, fruits and vegetables, and other farm products. The information will be relative and will enable the reader at a glance to visualize the general situation. No statistical data will be given beyond important changes in the week's range of prices. On the issuing dates the "Marketgrams" will be dispatched over the Bureau of Markets' leased wires to its field offices and thence distributed to farm papers and other publications which have requested them. Some 250 farm papers have been canvassed with regard to the service, and already 38 publications with a combined circulation of 2,000,000 have specifically requested the "Marketgrams" for use in their papers.

The United States Bureau of Markets is perhaps better equipped to collect produce market news than any other single agency in the United States. Its

representatives in the field and at market centers are in close touch with market conditions and their reports are received by the bureau's main office at Washington every day. In addition the bureau receives first-hand information from the superintendents of some 474 railways regarding carlot movements at shipping points. The collection of this information would be of little value, except as statistical data, were it not distributed as widely as possible so that producers, dealers, and others in the trade might have the benefit of it in the marketing of produce.

Aids Marketing of Products.

At the present time daily reports regarding live stock, meats, fruits and vegetables are issued and distributed by mail and telegraph to those who request the information. Weekly and monthly reports and special articles are also issued for the use of individuals and the press. Thousands of growers throughout the United States receive these reports or read them in the daily papers and many have stated that by keeping them informed of market conditions generally they have often been enabled to market their produce at a time and place better to meet consumption demands and at better prices than would have been the case had they been compelled to rely entirely upon the information furnished them by the trade.

The Bureau of Markets' object is to help place the marketing machinery upon an efficient basis and to promote fair dealing between buyers and sellers. The "Marketgram" service will doubtless aid in securing this result. The bureau hopes that in the very near future it will be able to issue a daily "Marketgram" also, which will summarize the markets from day to day. This daily information is already available and much of it is distributed by the bureau in special daily forms. The chief difficulty with regard to disseminating a daily summary of all markets is in perfecting machinery to effect distribution throughout the country in sufficient time to be of more than statistical value. However, every angle of the problem is being carefully investigated and it is simply a matter of time before efficient and effective distribution arrangements for daily marketgram service will be made.

YOUNG PUREBRED OUTWEIGHS SCRUB.

"Am marketing a 4-year-old scrub bull this week. It weighs only about 900 pounds as compared with 1,200 pounds for my purebred Shorthorn now 20 months old." With this comment a live-stock owner in Bath County, Va., enrolled in the "Better Sires—Better Stock" movement. He is a breeder of cattle, sheep, and swine, and has a purebred sire for each of these classes. The female stock comprises grades principally which will be improved through the use of purebred sires.

Extension of Quarantine Restrictions To Prevent Spread of Japanese Beetle

The quarantine to prevent the spread of the Japanese beetle, an injurious insect pest, has been extended to include new areas in the States of Pennsylvania and New Jersey recently found to be infested. The order, signed by Secretary of Agriculture Meredith, is effective October 1. The new areas placed under quarantine are:

Area Quarantined.

New Jersey: The townships of Lumberton, West Hampton, Burlington, Willingborough, and Beverly, and the cities of Beverly and Burlington, in Burlington County; the township of Haddon, the boroughs of Collingswood and Haddonfield, and the city of Camden, in Camden County.

Pennsylvania: That portion of Philadelphia County lying east of Frankford and Tacony Creeks, i. e., the area between these creeks and the county line separating Philadelphia and Bucks Counties; also the township of Bensalem, in Bucks County.

The restrictions imposed by the order are limited to the areas in these States actually determined as infested by the beetle, no restrictions whatever being placed on the movement of articles covered by the quarantine in the regions outside the infested areas. It is pointed out at the department that the quarantine is not an embargo in any sense, and provision is made for the movement of the articles from the infested areas after inspection and certification. The restrictions apply to the following:

Farm, garden, and orchard products of all kinds, including fresh or perishable crops, such as green corn, tomatoes, beans, peas, cantaloupes, watermelons, grapes, raspberries, cherries, peaches, apples, and all other fresh fruits and vegetables; grain and forage crops of all kinds; nursery, ornamental, and greenhouse stock, and all other plants, including bulbs and cut flowers; and soil, compost, and manure other than fresh manure.

WOOL CONSUMPTION REMAINS LOW, FEDERAL REPORTS SHOW

A total of 38,000,000 pounds of wool, grease equivalent, was used in the manufacturing plants in the United States during August. This is an increase of about 1,000,000 pounds over the preceding month, but is 18,000,000 pounds less than the amount used in August, 1919, according to reports released by the Bureau of Markets, United States Department of Agriculture.

The consumption during August of the different grades of wool, expressed in percentages of the total consumption, with comparative figures for February, 1920, was as follows: Fine, August, 27 per cent, February, 32 per cent; Half blood, August, 16 per cent, February, 18 per cent; Three-eighths blood, August, 15 per cent, February, 18 per cent; Quarter blood, August, 20 per cent, February, 18 per cent; Low, August, 3 per cent, February, 3 per cent; Carpet, August, 19 per cent, February, 11 per cent.

These figures show a gradual tendency for increases in consumption in the lower grades of wool, while fine, half blood, and three-eighths blood are somewhat below the February figures. The largest percentage increase is shown in carpet wools.

The amounts used, according to condition, were: Grease wool, 26,901,071 pounds; scoured, 4,832,686 pounds; and pulled, 1,116,199 pounds.

FALL SOWING OF OATS IN SOUTH.

The principal varieties of oats suitable for fall sowing in the South are the Red Rustproof, Fulghum, and Winter Turf, say specialists of the United States Department of Agriculture. The Red Rustproof and Fulghum should be grown in the Gulf States, Georgia, and the Carolinas, and the Winter Turf in Virginia, Tennessee, and Kentucky.

Fall oats should be sown on well-prepared land with a grain drill at the rate of 2 to 3 bushels to the acre. The date of seeding varies from September 15 to November 15, according to the locality. Only clean, plump seed should be sown.

European corn borer has been discovered in Canada, the United States Department of Agriculture finds, and warns against this new source of infection.

Fire and Razorback Hogs Play Havoc With Young Long-Leaf Pine in the South

How the struggle for existence of young long-leaf pine on cut-over lands in the South is handicapped by hog grazing and recurrent fires has been brought out by a six-year experiment in Louisiana.

Millions of long-leaf seedlings sprang up over the South in the fall of 1913, resulting from a very heavy seed crop and favorable weather conditions. At the request of Henry E. Hardtner, of Urania, La., the Forest Service of the United States Department of Agriculture, in cooperation with the Louisiana Department of Conservation, laid out a series of permanent experimental plats. They were established at Urania in January, 1914, the aim being to secure reliable information regarding natural reproduction of long-leaf pine.

Well Stocked with Seedlings.

Four sample tracts of one-quarter of an acre each were selected of about the same character and about equally well stocked with 1-year-old long-leaf pine seedlings. Two of these plats were fenced against cattle and hogs and two left unprotected. Further, one plat in each of these two series has since been burned over yearly (or nearly every year) and the other two protected against fires.

A remeasurement of the sample areas was made in the winter of 1919–20. The unfenced tracts were each found to contain only two long-leaf pine saplings. Since they originally had 734 and 813 seedlings, respectively, this was a loss of 99.6 and 99.7 per cent of the trees. The fenced tracts, on the other hand, were found to contain full stands, numbering 1,513 and 1,707, respectively, of little long-leaf trees. This is the equivalent of 6,052 and 6,826 trees per acre under protection, as compared with 8 per acre unprotected against hogs. This difference is practically accounted for, it is definitely known, by the fondness of the "razorback" hogs for the thick succulent bark on long-leaf pine taproots. Although present in widely varying numbers, this famous southern forager usually occurs in sufficient numbers to destroy during the course of the first two or three seasons, and even during periods of extraordinary reproduction, the majority of all young long-leaf pines. It should be remarked that, so far as known, no damage of this sort has been reported from blooded hogs.

Big Increase in Five Years.

In the fenced quarter-acre tracts there has occurred during the five years a considerable increase in the number of long-leaf seedlings. In one, for example, the number has increased from 927 at the start to 1,707, equivalent to 84 per cent, and in the other tract, from 810 to 1,513, or an increase of 87 per cent. The experiment further indicates that the grazing of hogs does not prevent the seeding in of short leaf and loblolly pines, for some have sprung up on both the ungrazed and grazed tracts.

The effect of yearly controlled burnings is shown in a decided check in the growth of long-leaf and the killing out of practically all of the short-leaf and loblolly pines, which are not particularly resistant to fires.

On the track burned over yearly only three-tenths of 1 per cent of the long-leaf saplings were over 2 feet in height, and the tallest was 2.8 feet, while on the protected tract 16.3 per cent were over 2 feet and the tallest measured 7 feet. The effect of burning on a very small tract of this size, whether controlled or not, is probably considerably less severe and injurious than that resulting from a fire over a large area where there occurs a preliminary period of heating and drying by the wave of hot air preceding the arrival of the blazing fire front. Since the saplings in the experiment are just beginning to "shoot" up height growth, the difference in rate of growth due to burnings during the next five years may be expected to be further accentuated.

American farmers planted 14,000 acres to hemp in 1920, according to the United States Department of Agriculture. The crop is valued at about $1,500,000.

Leave a hollow tree for the raccoon and keep poaching hunters out of your woods, the United States Department of Agriculture advises in a recent circular. The fur crop ought to yield you a tidy sum every year.

MODIFIES POTATO-IMPORT BAN.

Regulations governing the importation of potatoes into the United States have been amended with respect to Mexico by adding the port of Naco, Ariz., to the ports of El Paso, Tex., and Douglas, and Nogales, Ariz., previously designated as ports through which the entry of potatoes from the States of Chihuahua and Sonora, Mexico, would be permitted, and by requiring that such potatoes be inspected at the port of entry and pronounced free from dangerous potato diseases and insect pests prior to their release from customs. The changes went into effect September 15.

"Big Sisters" Club Formed To Help Care for Kiddies

Hampden County, Mass., has something new in the club line. It is a "Big Sisters'" club for the girls who care for younger brothers and sisters, and it has been organized by one of the boys' and girls' club leaders in Hampden County.

The idea is to help girls who must care for brothers and sisters under 5 years of age, to help them do it better and have more fun at it. Contrary to most theories, the little girls who are in the club like to care for the babies. They say babies are more fun than dolls. The real interest which they have in their charges and the feeling of responsibility they have toward them makes it appear that the Big Sisters' Club is going to grow to a big thing in this county.

When the idea of starting a club of this sort was launched certain girls who had made good in the home economics and canning clubs of past years—the clubs organized by the United States Department of Agriculture and the State agricultural colleges—were called together and the plan explained to them. At the second meeting everyone came back and brought three more. At the meetings this summer a Red Cross nurse gave demonstrations to the girls on the care and feeding of children.

Each girl who joins this club has to promise to help in dressing and bathing the family baby at least four times a week. In addition to this, she must aid in at least two of a long list of other things that babies require, such as specially prepared food, occasional lulling to sleep, and safeguards against ill health.

MEETS SUCCESS IN CAMPAIGN AGAINST NEMATODE DISEASE

The United States Department of Agriculture has been carrying on a successful campaign for the eradication of the nematode disease of wheat in Jackson County, Ga., where the nematode parasite had done considerable damage to the crop. A survey of the eastern and southern wheat belt, recently completed, indicates that the disease has not invaded North Carolina, Tennessee, or Ohio.

Weekly News Letter

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The News Letter is a news service, and editors are invited to reprint from it with or without credit.

DEAN HUNT TO BE DELEGATE AT INTERNATIONAL INSTITUTE

Thomas F. Hunt, dean of the College of Agriculture of the University of California, who is on sabbatical leave in Europe, has accepted appointment as permanent delegate representing the United States at the International Institute of Agriculture, Rome, Italy. Dean Hunt has long been interested in the problems of the institute. He was one of the delegates of this Government at the last meeting of the general assembly and spent much time then traveling over Europe and studying agricultural conditions. He went to Europe in September, 1918, as a member of the commission sent by the United States Department of Agriculture to make a study of agricultural conditions in the allied countries. During his career as an agricultural college man he has served in Illinois, Ohio, New York, Pennsylvania, and California. His wide knowledge of agricultural conditions in America, coupled with his extensive investigations in Europe, make him an exceptionally well-qualified man to represent the United States at the International Institute.

The International Institute of Agriculture is concerned primarily in gathering world statistics of crop production and crop movement. The United States Department of Agriculture has requested Dean Hunt to confer with the delegates from other agricultural countries and to urge improvement of the work, especially as it pertains to movements of agricultural products in trade. Under the present system of gathering statistics, a commodity can not be accurately followed after it changes form. That is to say, while absolute track may be kept of wheat so long as it remains wheat, practically all track of it is lost after it becomes flour. The same is true of wool and cotton after they are converted into cloth or other manufactured articles, and of various other staples. Until a system is perfected whereby all countries supply this information it will never be possible to give correct information as to world supply of any product.

The position to which Dr. Hunt has been appointed has been vacant since the death of David Lubin several months ago.

TO INSPECT AREAS INFESTED WITH EUROPEAN CORN BORER

E. D. Ball, Assistant Secretary of Agriculture; C. L. Marlatt, Assistant Chief of the Bureau of Entomology; and other specialists of the United States Department of Agriculture, left Washington October 1 for a field investigation of the damage done by the European corn borer, which has been spreading in sections of Massachusetts, New York, New Hampshire, and Pennsylvania.

The party went to Boston to inspect the infested territory near by. From there they will visit cornfields in the vicinity of Buffalo, N. Y., and will go to St. Thomas, Ontario, near which city new infestations have been discovered which have aroused some concern in the department because of the possibility of infestation spreading thence into the United States.

Among others in the party were W. R. Walton, in charge of cereal and forage insect investigations, and L. H. Worthley, in charge of European corn borer control.

BOY'S FLOCK WAS SHOWN AT FAIR AS STATE MODEL

"The thrill that comes once in a lifetime" was Frank Goss's of Morris County, N. J., this fall when he was asked to display his 25 purebred chickens as the model flock of New Jersey at the Interstate Fair at Trenton.

Frank is a small boy belonging to one of the poultry clubs supervised by the United States Department of Agriculture and the State agricultural college. The chickens which were displayed at the fair are the apples of his eye, having been raised by him from chickhood. He has guarded them from rats and hawks and fed them himself with carefully balanced rations three times a day.

Last year was the first year in the poultry club work for this Morris County boy. He set 4 hens and hatched 29 Rhode Island Reds, all of which he sold except 9 pullets and 2 cockerels, the very best of the flock. He entered a hen and a pullet at the county fair in 1919, and won the grand championship and two prize ribbons on the pullet and first and third prizes on the hen. The pullet went to the State fair and won the first prize ribbon there. At a later poultry show he won a silver loving cup, special ribbon, first and second prizes on pullets, and $4 in cash. His total expenses for the year—he keeps accurate records, so he knows—were $34.35 and his income amounted to $80.59.

This summer the State leader of the boys' and girls' club work in New Jersey decided to have a model backyard poultry flock exhibited in the new big building built this year on the State fair grounds to house the boys' and girls' club exhibits. The house for the flock was sent down from Connecticut. Then Frank Goss was asked to display his 25 purebreds in the house as a model backyard flock.

NEW METHODS OF COMBATING PEACH INSECT PEST SOUGHT

The season of 1920 was particularly favorable to curculio development, and the loss to Georgia peach growers has been quite heavy, amounting perhaps to as much as $2,000,000. At the present time defensive measures are largely spraying during the spring and early summer. This method of control, generally used by peach growers, has heretofore resulted in a fair degree of protection to the crop. The combination of unusual curculio abundance and hot and rainy weather has greatly lessened the efficacy of the control measures in vogue, and the Bureau of Entomology is conducting experiments to determine the possibility of wholesale destruction of the beetles in orchards by thorough spraying and dusting of the trees in the fall. It is expected that preliminary results from this work will soon be available and from which it will be possible to decide what value, if any, this method may have.

New methods of combating the plum curculio, which has been raising havoc with the southern peach crop, are occupying the attention of the Bureau of Entomology, United States Department of Agriculture. This beetle, which attacks not only the young fruit shortly after it has set but also fruit as it is nearly ripe on the trees, lays its eggs under the skin, the resulting grubs eating their way into the heart of the fruit. The life of an individual adult curculio may be nearly one year, and the beetles thus continue feeding on the leaves of the peach until hibernation late in the fall and two or three months after the fruit has been harvested.

Should Keep Suitable Business Records— Increases Farmer's Credit at the Bank

Farmer Jones desired to negotiate a loan at his local bank.

"Just what is your financial condition?" the banker asked him.

"Why," said Jones, "I own a house and land, and a couple of horses and some cows and live stock, and an orchard and——"

"Have you a detailed inventory showing the value of these things?" the banker interrupted him.

"No—o," the farmer replied. "I haven't time to bother keeping books."

"Good gracious, man!" exclaimed the banker, "anyone can keep books. The way the thing's worked out nowadays it doesn't require more than five minutes' work a day. Then when you come here for a loan you could produce a sheet of paper and say, 'Here's what I've got, here's what I owe, and here's what I'd have in cash if I sold out to-morrow.' As it is, I'm afraid I can't let you have the money until I have this information."

Simple System Meets Farmer's Needs.

This conversation takes place in hundreds of towns every day, according to specialists of the Office of Farm Management and Farm Economics, United States Department of Agriculture. Of course, farmers are very busy men. They haven't the time to study complicated accounting methods. But, according to the Federal specialists, once the principles of bookkeeping are understood and all farm conditions studied, a simple system of bookkeeping can be developed to meet the farmer's needs.

The foundation of any set of books is an inventory showing the farmer's assets and liabilities. The assets include real estate, live stock, machinery and tools, produce, feed and supplies, cash on hand and in bank, and accounts receivable at the date the inventory is taken. Each item under these headings should be listed separately. Real estate should be valued at what it can be sold for under normal conditions; live-stock feed and farm produce at market prices, less cost of marketing; farm supplies at cost; machinery and tools at a price allowing for annual depreciation. The liabilities should include mortgages, notes, and accounts payable. The sum of the liabilities deducted from the total assets will show the farmer's net worth.

Classification of Accounts.

While an inventory is generally the first thing a banker asks for when making a loan, he also wants to know the sources of income. By going just a little further the farmer can keep records that will enable him to know his profits and losses. This requires a classification of accounts in which certain principles should be followed. The precise classification to be used is determined by the prevailing conditions on the farm in question.

Full details regarding the various phases of farm bookkeeping are contained in Farmers' Bulletin 511, "Farm Bookkeeping"; Farmers' Bulletin 572, "A System of Farm Cost Accounting"; and Farmers' Bulletin 782, "The Use of a Diary for Farm Accounts." These bulletins can be had upon request of the United States Department of Agriculture, Washington, D. C.

Sweet potatoes make a superior table and cooking sirup, say chemists of the United States Department of Agriculture. Thus far no large commercial use has been made of the discovery. The department is prepared to tell how to make sweet-potato sirup at home and how to use it in cookery and candy making.

Fall-sown grain crops in the South provide a winter cover for the land, thus preventing washing and leaching. They also provide winter pasture and grain and forage for work stock and may be grown to advantage in rotation with corn and cotton. The oat crop is one of the best for fall sowing where it withstands the winter.

CONCERNED OVER PREVALENCE OF COCONUT PALM DISEASE

Some concern is felt by scientists of the United States Department of Agriculture over reports that "red ring," a serious disease of coconut palm, has been recently discovered to be widespread in the West Indies and that it also is known to occur in the Canal Zone. They are particularly concerned over the prevalence of the disease in view of the fact that large coconut orchards are being planted in Costa Rica and elsewhere outside the United States through the activiey of Americans.

The disease, it is said, has presented deceptive features, and is difficult to detect, although probably of long standing. It is believed likely, therefore, that the disease may occur in other American possessions where it is confused with other coconut maladies, as has been the case for a long time in the West Indies. Coconut planters in Porto Rico, it is said, are keeping a sharp lookout for evidence of the disease there, but have not discovered it as yet.

Red ring is believed to be a disease of long duration, beginning in the first two or three years of the tree's existence. Obvious outward symptoms of its presence appear only in connection with the approach of death of the tree. These symptoms consist of the dropping of nuts and the progressive discoloration and failure of the leaves, beginning usually, but not invariably, with the oldest leaves, and always progressing toward the center of the shoot, according to observations recently made by scientists. It has been found that the disease can be communicated from infested plants to their neighbors.

Notable work in investigating the nature and remedies of the disease have been done by scientists of the Imperial (British) Department of Agriculture for the West Indies, and American specialists are much interested in its progress, as it has aided in their own study of the disease. Planters are cautioned not to plant nuts that have lain on the ground in the neighborhood of infested trees or their previous sites. They are advised to destroy promptly infested trees, especially the early cases. Care should be exercised in importing seed coconuts from regions where the disease is known to occur.

WESTERN NEW YORK APPLE PRODUCTION.

The western New York fruit belt is the oldest commercial apple-growing district in the United States. Few other regions in America have had the benefit of the experience of former generations in the production of apples. Thus, there are men who have orchards 30 to 60 years of age, as well as those who have recently planted young orchards.

In this region the apple orchard is only a part of the farm business, other fruits and such crops as beans, potatoes, and hay being extensively grown. Department Bulletin 851 treats of the relation the orchard bears to these other enterprises, of the orchard practices followed by the more successful growers, the effect of these practices on yields, the returns derived from different systems of orchard management, and the cost of maintaining orchards under each system.

How to Form a Cooperative Association—Success and Failure of Others Studied

The actual experiences of 14,000 cooperative marketing associations in the United States—their successes and failures, data which it would take a farmer a lifetime to gather—are now available to him in an hour's reading in the form of Farmers' Bulletin 1144 recently published by the United States Department of Agriculture. The information presented represents the result of thorough investigation by specialists of the department, who have made a study of marketing association problems. The bulletin points out the successful methods to be followed and the pitfalls to be avoided.

Sounds Warning Note.

In particular a warning note is sounded that a cooperative association is ineffectual unless there is definite need for it and that in administration true cooperative spirit prevails. Farmers who are satisfied with the results secured without an organization had better not undertake a cooperative marketing venture. Need and desire for a cooperative marketing association should be the determining factors, such as arise from lack of marketing facilities or from dissatisfaction with existing agencies.

The characteristics and make-up of the local population should also be carefully studied. To be a success the members should have implicit faith in the effectiveness of the organization. There must be a sufficient volume of business also to make economical operation possible. A community that produces a considerable quantity of one product or a few products offers better opportunities for cooperative marketing than one which raises small quantities of a large variety of products.

Once organized, cooperative principles must be closely adhered to. Each member should have but one vote, so that one or a few members can not have complete control. There should be able management of the association. The business manager must be capable and thoroughly fitted by experience and temperament for the position. Good business methods must be followed and accurate records kept.

Many successful organizations find it advisable to have contracts with the members whereby the latter agree to market certain products through the association. This removes any temptation to sell individually. A grower unwilling to enter into such an agreement is not a strong supporter of the enterprise. The pooling of shipments whereby the returns for products sold during a certain period are averaged is another important factor. This method protects the members from loss on account of unfavorable market conditions and assures each shipper the same price for equal grades.

The foregoing are a few of the suggestions offered in Farmers' Bulletin 1144. In addition to pointing out when a cooperative organization should and should not be undertaken, the bulletin details methods of organization, by-laws, incorporation, financing, selection and qualification of the management, bonding, and the duties of the members. Farmers' Bulletin 1144 may be had upon request to the United States Department of Agriculture, Washington, D. C.

RECENT STATE GAME LAWS ALONG BIRD TREATY LINES

The total number of game laws enacted in 1920 probably will not exceed 60, which is about normal for "even" years, when only a few States hold legislative sessions. In the laws enacted further progress was made along the line of harmonizing State legislation with the migratory-bird treaty act regulations.

The most important changes affecting big game were in New York and Quebec. New York reenacted the buck law and limited the hunter to one buck a season. The deer season was also modified in several localities. In Quebec the season was shortened 19 days on deer and bull moose, except in four countries, and 50 days on caribou.

Legislation of far-reaching importance looking to the preservation of quail and other upland game birds included an act of Congress, approved December 18, 1919, prohibiting the sale of upland game birds in the District of Columbia and an act in Maryland prohibiting the sale of quail, ruffed grouse, introduced pheasant, and wild turkey in that State.

For the convenient use of sportsmen and others the Biological Survey of the United States Department of Agriculture has compiled information resulting from game legislation and this has been published as Farmer's Bulletin 1138. This contains a summary of Federal, State, and Provincial game laws for 1920; a summary of laws relating to seasons, licenses, limits, sale, and export; disposition of game raised in captivity; the text of the Lacey Act regulating interstate commerce in game, and of the tariff act prohibiting importation of plumage; the law protecting birds and their eggs on Federal bird reservations; the regulation regarding hunting on national forests; the treaty for the protection of migratory birds; the migratory-bird treaty act, and the Federal and Canadian regulations; text of order of Secretary of Agriculture permitting the killing of reedbirds; a list of officials from whom copies of game laws may be obtained; and a list of the publications of the Department of Agriculture relating to game. Farmers' Bulletin 1138 may be had upon request of the United States Department of Agriculture, Washington, D. C.

REPORT MEAT PRICES FOUND ON VISIT TO SHOPS IN BRAZIL

E. Z. Russell and L. B. Burk, representing the United States Department of Agriculture in South America, have furnished the following account of retail meat shops in Rio de Janeiro, Brazil:

Beef is sold fresh every day; none can be carried over, because only two or three shops in the city have any refrigeration, though the population of the city is approximately 1,500,000. A large percentage of the fresh meat in Rio is killed at an abattoir outside the city and at a packing plant two hours distant by train. The meat is received in the afternoon and all is sold before noon of the following day. The city's daily meat consumption is approximately as follows: Five hundred and fifty cattle of an average dressed weight of 480 pounds, 80 hogs, and 20 sheep and goats.

The following meat prices were current at one of the retail markets early in July: Good beef with all bone taken out, 14 cents; whole hogs' heads, 17 cents per pound; fat sides, sold rolled up, 18 cents; smoked pork loin and smoked pork chops, 40 cents; best quality hams, 70 cents; second quality, 55 cents; dry salt sides, 25 cents; wieners, 35 cents; salted pigs' feet, 13 cents; salted spareribs, 25 cents. Incidentally, live spring chickens sold at 35 cents a pound and fresh eggs at 55 cents a dozen.

LIST OF COTTON IMPORT LICENSES.

A revised list of about 700 licenses authorized under the rules and regulations governing the importation of cotton into the United States, to purchase and use, traffic in, or store imported cotton has been prepared by the United States Department of Agriculture and is available to interested persons on application. Information as to firms not in the list may be obtained by special inquiry.

Show Need for Liberal Use of Roughage In Feeding Beef Cattle During Winter

To assist farmers and stockmen in feeding beef cattle economically during the coming winter, specialists of the United States Department of Agriculture point out the need for a liberal use of roughage. The meat situation in the United States requires a maximum of efficiency in feeding if production is to be maintained in the face of high costs for feed and labor. Recommendations of the department follow:

Economy should be the keynote in production. However, discretion must be used so that economy will be consistent with good gains. A ration might be so economical as to merely maintain the animal, but this would not be economy when gain in weight was the object sought.

Greater Use of Cheaper Feeds.

At the present time, when grain and concentrates are so expensive, it is all the more important that a greater use be made of cheaper feeds. The cheaper feeds are those raised on the farm and consist primarily of roughages. Then, greater economy will depend upon a greater use of roughages, properly balanced with some grain or protein concentrate.

It should be borne in mind that a balanced ration is not necessarily the most economical. A ration having a nutritive ratio of 1.6 might produce the greatest daily gains on a 2-year-old steer, yet, it might show better judgment and more profit to feed a ration with a ratio of 1.8, produced by the utilization of a greater amount of cheaper roughages, and a lesser amount of the higher-priced concentrates.

The practice of feeding high-priced feeds, and not making a full use of roughages, is quite general throughout the Corn Belt. In some of the Middle Western States, very little straw is used for feed but practically all for bedding. Quite often the cattle are allowed to run around the straw stack, resulting in a waste of at least 50 per cent of the straw. Straw, as dry roughage, forms a very prominent place in a ration for cattle, either in the fattening lot or when fed to stockers and feeders.

In some sections of Indiana oats and wheat straw make up the entire dry roughage for the greater part of the feeding period. In certain parts of Nebraska, where alfalfa is produced abundantly, the straw is used only for bedding. Even where alfalfa hay is fed, cattle will eat more or less of good straw, if they have access to it. It is a good idea to keep some straw before them. Let the cattle pick it over and use what is left for bedding.

Waste No Straw.

Now is a good time to look at your straw stack. Trim up the stack by raking down the sides and properly topping so as to shed the fall rains. By spending a day on your straw stacks now you will save many a ton of straw which can be used in replacing considerably expensive hay next winter.

In some States most of the corn is cut, shocked, and husked out by hand later in the season. Why not let a shredder do the husking and have a roughage left, the greater part of which will be relished by the cattle? The shredded fodder, which is refused by the cattle, makes one of the very best bedding materials.

Corn fodder, while it is a good roughage, is not an economical one. There is a very large waste in handling. A large percentage of the leaves are lost, and the corn itself is about all the cattle get from the entire corn plant. Run your fodder through a shredder, feed the ear corn separately, and the greater part of the corn plant will be utilized. Corn fodder, however, can be used advantageously at the beginning of the feeding period in the fall or early winter. Range cattle that have never seen corn or grain of any kind can be put on feed more rapidly by starting on green or cured corn fodder. This kind of cattle will begin nibbling at the leaves and gradually get to eating the corn. On the other hand, if ear corn was placed before them it would be days before they would begin to eat it.

The use of legume hays, where grown on the farm, will obviate the use of high-priced protein concentrates. Good hay, however, is high priced and should be fed in such a way as to avoid any waste.

Corn stalks in the field, after the corn has been removed, should be utilized by turning a sufficient number of cattle on them to clean them up completely before severe winter and snows come.

Protect Contents of Silo.

The most important roughage, so far as economical beef production is concerned, is yet to be mentioned, and that is silage. Silage is no longer a cheap feed, but in the strictest sense of the word there is no cheap feed. Silage is worth at the present time from $10 to $13 a ton, depending upon local labor conditions and upon the quality and yield of corn. Even at these prices it makes one of the most economical cattle feeds. More cattle can be handled on a given farm area where the silo furnishes the bulk of the roughage. More feed can be stored per cubic foot of space than by any other means. Cattle can be fattened on silage, supplemented with a small amount of a highly concentrated protein feed, such as cottonseed or linseed meal, and a little dry roughage, such as oat straw. Stockers and feeders can be wintered on silage alone.

How about your silo? Are there any hoops to tighten, any cracks to be repaired, or any painting to be done on the inside? Now is the time to get your silo in good repair. Frost will come before many weeks, and if your silo is still empty and not in shape you will have to fill it anyway in order to save the greater part of the corn intended for silage. After two or three heavy frosts hit your corn, you have very little of the leaves left to put in the silo.

FLYING DUST AND A SPARK PRODUCE COSTLY EXPLOSIONS

The placid grist mill may be as dangerous as a powder factory. The strongest and most perfectly fireproofed grain elevator may be rent into twisted trusses from the explosion of mere dust particles. A spark from a slipping belt, the static electricity generated by a running machine, or the heat generated in a coating of dust on the outside of an incandescent light bulb may start the blast.

Such catastrophes have been numerous in the last two years. In a single nine months they cost 80 human lives and the destruction of $7,000,000 in property. The United States Department of Agriculture, through the dust-explosion investigations of the Bureau of Chemistry, has succeeded in locating the trouble and has set in motion agencies which already have checked the epidemic of disaster. It is cultivating the cooperation of manufacturers and commercial bodies throughout the United States to make the work complete.

The engineer in charge of grain-dust explosion investigations in the Bureau of Chemistry appeared before the National Safety Council Congress in Milwaukee September 29 and gave the members some of the practical results of the work of himself and colaborers.

The work is described at length in the proceedings of a conference of men engaged in the grain-dust explosion and fire-prevention campaign conducted in cooperation with the United States Grain Corporation, which is available for distribution by the Bureau of Chemistry, United States Department of Agriculture.

MOTOR TRUCKS ON CORN-BELT FARMS BELIEVED PROFITABLE

(*Continued from page 1.*)

a part of their produce, since purchasing trucks. For those who have changed market, the average distance to the old market was 7 miles, and to the new market is 18 miles.

The rated capacity of these trucks varies from one-half to 2 tons. Seventy per cent of them are rated at 1 ton, and only 9 per cent of them at less than 1 ton.

Experience with trucks has caused 57 per cent of these men to decide that the 1-ton size is best for their conditions, 25 per cent that the 1½-ton size is best, and 12 per cent that the 2-ton size is best. Practically one man in four has decided that a truck larger than the one he now owns would be better suited to his conditions.

Ninety-one per cent believe that their trucks will prove to be a profitable investment.

In the opinions of these men the principal advantage of a motor truck is in saving time, and the principal disadvantage is "poor roads."

As compared with horses and wagons, the trucks save about two-thirds of the time required for hauling to and from these farms.

Bad Roads a Big Factor.

On the average there are over eight weeks during the year when the roads are in such condition on account of mud, snow, etc., that these trucks can not be used. The roads on which nearly 95 per cent of them usually travel are all or part dirt.

The condition of the roads prevented the use of the trucks with pneumatic tires a little less than seven weeks during the year covered by the reports, and of those with solid tires a little over nine weeks.

Twenty-four per cent of the trucks are equipped with pneumatic tires, 77 per cent with solid tires, and 49 per cent with pneumatics in front and solids in rear. However, experience has convinced 58 per cent that pneumatics are best for their conditions, 35 per cent that solids are best, and 7 per cent that pneumatics in front and solids in rear are best.

These men have return loads for their trucks about one-third of the time.

A majority of these men still use their horses for some hauling on the road.

On more than half of the farms all the hauling in the fields and around the buildings is still done with horses and wagons.

About 40 per cent of these men did some custom hauling with their trucks during the year covered by the reports. The average amount received by those who did such work was $132.

Their owners estimate that on the average these trucks travel 2,777 miles and are used on 112 days per year.

Life of Trucks 6½ Years.

The average estimated life of these trucks is 6½ years, and on this basis depreciation is usually the largest single item of expense in connection with their operation.

The average cost of operation, including depreciation, interest on investment, repairs, registration, and license fees, fuel, oil, and tires, is 15.2 cents per mile for the ½ and ¾ ton trucks, 15.2 for the 1 ton, 21.3 cents for the 1¼ and 1½ ton, and 25.8 cents for the 2 ton.

The average cost of hauling crops, including the value of the driver's time, is 50 cents per hour, is 24 cents per ton-mile with the ½ and ¾ ton trucks, 24.1 cents with the 1-ton, 23.3 cents with the 1¼ and 1½ ton, and 21.5 cents with the 2-ton trucks.

Nearly 85 per cent of these trucks had not been out of commission when needed for a single day during the year covered by the reports, and 80 per cent of the owners stated that they had not lost any appreciable time on account of motor and tire trouble, breakage, etc., when using their trucks. About one truck in fifteen was out of commission more than five days, however, and one owner in forty reported a loss of more than 5 per cent of the time when using his truck.

Fifty-six per cent of these men have not reduced the number of their work stock since purchasing trucks. Twenty-four per cent have disposed of one or two head, and 20 per cent of more than two head. The average reduction for all farms is 1.2 head.

Half of these men own tractors as well as motor trucks. Most of the tractors are owned on the larger farms, however. Only 33 per cent of the men whose farms contain 160 crop acres or less own tractors, while 65 per cent of those with over 320 crop acres own them. The number of work stock kept on the farms where both trucks and tractors are owned is only slightly less than the number kept on the farms of corresponding size where only trucks are owned.

Seventy-eight per cent of these farmers say that their trucks reduce the expense for hired help. On those farms where there is a reduction the operators estimate that it amounts to $209 per year on the average.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended October 2, 1920:

Vetches. (Revised.) Farmers' Bulletin 515.

Mites and Lice on Poultry. (Revised.) Farmers' Bulletin 801.

Care of Mature Fowls. Farmers' Bulletin 1105.

Common Poultry Diseases. Farmers' Bulletin 1114.

Selection and Care of Poultry Breeding Stock. Farmers' Bulletin 1116.

Lespedeza as a Forage Crop. Farmers' Bulletin 1143.

Dourine of Horses. Farmers' Bulletin 1146.

Dry Farming in Western South Dakota. Farmers' Bulletin 1163.

Laws Relating to Fur-Bearing Animals, 1920. Farmers' Bulletin 1165.

Better Seed Corn. Farmers' Bulletin 1175.

Nematode Disease of Wheat. (Professional Paper.) Department Bulletin 842.

Currant-Grape Growing. (Professional Paper.) Department Bulletin 856.

Marketing Eastern Grapes. Department Bulletin 861.

The Shrinkage of Market Hay. Department Bulletin 873.

Hairy-Vetch Seed Production. (Professional Paper.) Department Bulletin 876.

Australian Wheat Varieties. (Professional Paper.) Department Bulletin 877.

Effects of Pork-Curing Processes on Trichinae. Department Bulletin 880.

Experiments with Flax on Breaking. Department Bulletin 883.

Toxic Action of Certain Gases. Department Bulletin 893.

The Western Farmer's Water Right. (Professional Paper.) Department Bulletin 913.

Selection of Seed Corn in Porto Rico. Circular 18.

Cocklebur. Department Circular 109.

Government Exhibit at 1920 National Dairy Show. Department Circular 139.

Copies of these publication may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 515; Department Bulletin No. 842; Department Circular 109.

Curculio caused $2,000,000 damage to the peach crop of one southern State in 1920. The insect lives in the foliage several months beyond the fruit season, and the United States Department of Agriculture is experimenting with a new method of fall extermination.

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1920

Weekly News Letter

Published by the
United States Department of Agriculture
Washington

VOL. VIII. OCTOBER 20, 1920 No. 12

FEW FARMERS MAKING LARGE PROFITS IN AREAS STUDIED

Results of Farm-Profits Survey Covering Three Representative Sections.

Specialists Say Increases in Farm Income During 1916–1918 are More Apparent Than Real, In View of the Decreasing Purchasing Power of the Dollar.

Figures on farm profits, covering seven years in two areas and five years in a third, were recently made public by the United States Department of Agriculture. These figures show—

That comparatively few of the farmers in the groups studied have been making large profits during the recent years of comparatively high prices.

That their average return on investment increased from about 4 per cent in 1913 to 7 per cent in 1918.

That most of them are making less than $500 cash per year over and above the things the farm furnishes toward the family living, which, however, constitute a very important factor.

The facts brought out in this report are of special significance, since they represent the results of continuous studies of the same farms extending over a longer period of time than do any other such investigations thus far completed by the department.

Specialists of the Office of Farm Management and Farm Economics, who have conducted these investigations, say that while the results will not justify making flat generalizations as to what farm profits are for the country as a whole, they believe they should have weight in the consideration of the general problem, as indicative of the trend of farm returns in representative farming sections.

Many Features Studied.

The three groups of farms studied are located, respectively, in Washington County, Ohio (25 farms, hill country, 7 years), Clinton County, Ind. (100 farms, Corn Belt, 7 years), and Dane County, Wis. (69 farms, dairy region, 5 years). Representatives of the department visited these farms year after year, taking records covering the farm business under the following heads:

Distribution of farm area.

Crop yields.

Amount of work stock and of other live stock.

Amount of labor used.

Amount and distribution of farm capital.

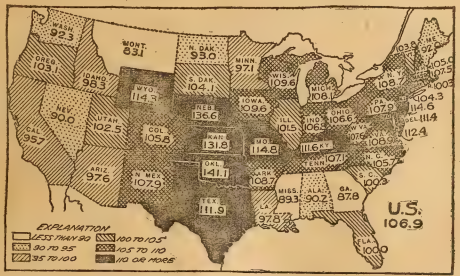
Amount and distribution of receipts and expenses.

Value of the family living obtained from the farm.

Amounts of the more important products sold and prices received.

(*Continued on page 16.*)

GENERAL CROP CONDITIONS BY STATES ON OCTOBER 1.



The map shows the composite condition of all crops in each State on October 1. The relative importance of each crop is considered in obtaining the State averages. One hundred represents the 10-year average (not the normal) condition of the State.

DISTRIBUTES EXCESS WOOL PROFITS TO 100,000 GROWERS

Refunds Made by Dealers Through the Federal Bureau of Markets.

Returned Profits Made by Dealers Who Handled the 1918 Wool Clip Under War Regulations—Total Excess Profit Estimated at More Than $1,000,000.

Distribution of excess profits made by dealers who handled the wool clip in 1918 under regulations of the War Industries Board is being made by the United States Department of Agriculture to some 100,000 wool growers. It is estimated by the Bureau of Markets, which has charge of making the refund from the dealers to the growers, that the total amount of such excess profits was more than $1,000,000, of which approximately $460,000 has been turned over to the bureau for distribution.

Some of the dealers who accumulated excess profits have failed or refused so far to refund the entire amount, and the bureau is at work auditing the books of some, interviewing others, and corresponding with still others, in order to bring about final settlements. The dealers who operated under permits signed agreements with the War Industries Board binding themselves to abide by the regulations of that board, which specifically limited their profits. Some of these dealers have delayed their settlements in order to have certain questions disposed of, among which was their liability for the payment of income tax upon the amount of such excess profits, with regard to which

the Commissioner of Internal Revenue issued a final decision recently. Other dealers made refunds of their excess profits under protest, reserving any legal rights that they might be able to establish by litigation. This means that if it should finally be determined by the courts that the dealers were under no legal obligation to pay over the excess profits to the department, it would then be under a legal obligation to return the money paid under protest. Hence, such payments can not safely be distributed.

The cases in which payments have been refused are being prepared as promptly as possible for transmission to the Department of Justice, with recommendation for the immediate institution and vigorous prosecution of suits for the recovery of the excess profits, which will be distributed to the growers entitled to them as soon as received.

Under its war powers, the Government, in order to conserve the wool supply for military and public needs, early in 1918 asserted a prior right to the wool clip of that year. Regulations for handling the wool were issued on May 21 by the Wool Section of the War Industries Board. Every dealer who desired to handle wool that year was required to take out a permit, and to agree to abide by the regulations. The growers were to receive the value of their wool, as determined by the valuation committees of the War Department, based on July 30, 1917, wool prices, with certain deductions and allowances.

How Excess Was Determined.

The dealers were divided into two general classes—distributing-center dealers and country dealers. Certain points were designated as distributing centers and dealers who received wool on consignment at these points were called distributing-center dealers. There were 178 of these dealers. In the case of wool consigned to such dealer at distributing centers, it was provided that the consignor should receive the full value of the wool as determined by the War Department's valuation committees and paid by the Government to the dealer, less any freight charges and interest on advances made. The Government paid the distributing-center dealer a commission for his services, over and above the valuation placed on the wool by the War Department's valuation committees. Consequently in the case of consigned wool handled in accordance with the regulations there would be no excess profit made by the dealer.

Approved country dealers were allowed to purchase wool and were required to pay the grower their estimate of the valuation that would be placed on the wool by the valuation committees, less freight to the Atlantic seaboard, interest on the money involved, moisture shrinkage, and in most cases a gross profit of 1½ cents per pound. There were over 4,500 dealers who purchased wool. Since the price paid by the country dealer was based upon an estimate, it was possible for him to accumulate excess profits. It was accordingly provided in the regulations that when his total season's business showed a profit on all the wool handled by him in excess of what the regulations allowed, such excess profits were to be disposed of as the Government might decide. Many distributing center dealers acted as country dealers also. It will be apparent, therefore, that when the dealers' accounts for a season's business were made up they might, and in many cases did, show excess profits.

The War Industries Board endeavored to see that the regulations were carried out, but did not handle the wool or value any particular lot. The valuation was made by or under the direction of the War Department. The War Industries Board disbanded as soon as possible after the signing of the armistice in 1918, and the work of its wool section was transferred to the Bureau of Markets by the President's order of December 31, 1918.

Many Operated Without Permits.

There was thus imposed upon the Bureau of Markets the duty of securing and auditing the reports of 178 distributing center dealers and over 4,500 country dealers. A large number of dealers operated without permits, and in many cases this fact was not discovered until recently. Many dealers did not keep complete records, and in some cases the records had been destroyed or otherwise disposed of. All of this made a large amount of work for the bureau, and necessitated considerable correspondence, as well as some travel, since it was necessary to get in touch with dealers all over the United States. This happened at a time when there was a great demand for persons having accounting and clerical ability, and it was accordingly difficult to secure or retain qualified assistants. For some time there was doubt as to whether Congress would provide the money needed for carrying on the work, and this added to the difficulty. Consequently, the force was limited, and constantly changing.

Also, many dealers did not dispose of all their 1918 wool until well along in 1919, and could not make final reports until this was done. Moreover, the distributing center dealers were delayed in making their reports by the pressure of the work incident to the handling of the 1919 clip. Consequently, the work of getting in and auditing the final reports could not be expedited until the fall of 1919. Each of the reports, of which there were more than 4,500, had to be audited carefully, and a great deal of correspondence with dealers was necessary to explain to them how they should make the reports. Notices calling for the refund of the excess profits were then issued. As these refunds came in, it was necessary to determine the amount that each grower should receive as his share, since the distribution of the excess profits of each dealer is confined to the growers whose wool he handled.

OFFERS PROMISING FIELD FOR AMERICAN LIVE STOCK

American purebred animals to the value of $400,000 were sold in South America during the first six months of this year, and live-stock commissioners sent to South America to develop the American purebred industry in that country report that the field is very promising. Even in out-of-the-way places where transportation facilities are poor purebred hogs and high-grade and purebred bulls have been found by the commissioners. At Lavras, a town about 250 miles northwest of Rio de Janeiro, there is an American mission college whose farm contains purebred Duroc-Jersey hogs and Brown Swiss and Holstein cattle, the foundation stock of which was imported from the United States.

Most of the cattle in the State of Minas Geraes, one of the important stock-raising sections of Brazil, are dairy stock showing considerable Holstein blood. The cows are milked once a day and produce on an average about three quarts of milk. The commissioners are of the opinion that this production could be materially increased by better feeding and more scientific handling of the cows.

According to reports received by the Bureau of Markets, the outlook for the future marketing of American purebred live stock in South America would seem to be particularly good, if it is properly developed, and the commissioners are doing everything possible to encourage the business.

Grain dust and similar mill siftings appear harmless, but filtered through the air and ignited in a closed structure, they are as deadly as dynamite. Such explosions cost 80 lives and $7,000,000 property damage in 1919. The United States Department of Agriculture dust-explosion investigation service has practically eliminated the evil.

BASIS SOUGHT FOR IMPROVING PRODUCE MARKETING METHODS

Accurate Information Gathered on Costs of Marketing Milk and Potatoes.

Inquiry Includes Data as to Wages Paid All Persons Engaged in the Work of Distributing—Special Attention to Milk Situation in Columbus, Ohio.

For the first time in this country, so far as is known, a comprehensive effort is being made to secure detailed and accurate information on the costs of marketing. Hitherto investigations of this nature have either been very limited in scope or have contained such a large element of estimate as to make the figures secured practically valueless. But the Bureau of Markets, United States Department of Agriculture, in undertaking an investigation into the costs of marketing farm products, has approached the subject in a manner calculated to bring forth complete and authentic information upon which can be based intelligent reasoning as to what reforms or changes may be needed in the system of marketing.

Only two of the many farm products have been selected for study at this time—milk and potatoes. Dr. Lewis H. Haney, who is in immediate charge of the work, is basing his results on actual cost figures connected with the handling of potatoes and milk from the producer straight through to the ultimate consumer: Figures capable of reconciliation with a profit-and-loss statement of the business concerns from which they are obtained. Rather than put out anything short of absolutely accurate estimates, the bureau will limit the number of cases reported on.

Dealers Are Cooperating.

"The cooperation we are receiving from the dealers is very gratifying, and is, indeed, a paramount feature of our work," says George Livingston, Chief of the Bureau of Markets. "Without this splendid cooperation our investigations would be much more difficult to conduct.

"The Cost of Marketing Division of the bureau began active work last June and already has gathered reports covering a considerable number of potato dealers. The milk investigation is likewise proceeding with satisfactory speed. I am certain that the Cost of Marketing Division will, when its work is completed, have information of real value to give to the public. Certainly no investigation could be conducted which is of greater concern to everyone—producer, dealer, and consumer. There is no subject upon which the public more greatly desires enlightment, or is more richly entitled to it."

While securing cost figures, the bureau is also ascertaining the prices paid for the chief kinds of materials and supplies used in the marketing system for potatoes and milk, as well as complete data concerning the wages paid to all those engaged in the work of distribution.

One of the principal reasons that milk was chosen as one of the first commodities to receive attention is that it is practically the only farm product which has but one step from producer to consumer. Another is the widespread agitation in nearly all sections of the country concerning the prices of this important article of food. Moreover, the milk trade in its broadest aspect includes business methods ranging all the way from simple trading to highly specialized manufacturing.

Why Potatoes Were Chosen.

Potatoes were chosen because no other farm product is regarded as a more staple food, and because nearly every person in the land eats potatoes once, twice, or even three times a day. In addition to this the marketing of potatoes involves many steps. Perhaps few farm-raised commodities are handled as often before reaching the consumer.

The work on potato marketing costs is being actively conducted at Boston and Chicago. Bureau representatives at Boston will cover the Maine crop and those at Chicago will study the output of Wisconsin and Michigan. A further effort will be made to secure accurate data on the costs of marketing Colorado and Idaho potatoes through Kansas City dealers.

Among other items connected with the investigational work on potatoes especial attention is being paid to "shrinkage," the object being to secure accurate data which will enable the bureau to say in dollars and cents just what this item amounts to. Several cases have been reported in which the "shrinkage" on a car of bulk potatoes runs as high as 9 per cent. The usual estimate by those in the trade, however, is that 3 per cent "shrinkage" is normal. This amounts to about 1,200 pounds per carload. The "shrinkage" is less when potatoes are sacked, as pilfering and rough handling are by this means reduced to a minimum.

Another item of importance in potato shipments is that of foreign matter, principally dirt. Complaints have been received from the Chicago territory concerning the large amount of dirt found, one dealer claiming that each sack of potatoes from certain producing sections has contained from 10 to 15 pounds of soil.

Studying Milk Situation.

In carrying out the investigation into milk marketing costs, a special intensive study is being made of the milk situation at Columbus, Ohio, where the milk dealers claim to be crushed between high prices charged by producers and low prices paid by consumers. In addition, a questionnaire has been sent out to a large number of dealers scattered over the country. It is planned, also, to make intensive studies in certain representative cities similar to the study now being made at Columbus.

From the information gathered thus far it is apparent that milk dealers in many communities are injuriously affected by two kinds of uneconomic competition: On the one hand, there are many small one-wagon dealers who do not keep any records of their costs and who are satisfied if they make wages for themselves. On the other hand, there frequently will be in a community a large concern which has a capacity in excess of the business it is doing and which, as a consequence, is endeavoring by heavy advertising and by making concessions in credit and price to increase its volume. This disturbs conditions and causes loss to those dealing on a sound basis.

The Bureau of Markets believes that an accurate presentation of the actual cost of marketing milk will make for more reasonable competition in the industry and will set at rest the fears of both the producers and the consumers.

NO REST FOR THE SCRUB.

"Breed, feed, weed, read, and succeed. Use purebred sires." This legend appropriately arranged was printed on the gable of the cattle barn where it could be seen by visitors at the Grange Fair of St. Joseph County, Mich. Largely through the influence of the St. Joseph County Live Stock Improvement Association, inferior sires are being weeded out. William T. Langley, president of the association, has notified the United States Department of Agriculture that local farmers keeping purebred sires only will receive gate-post signs entitled "Purebred Sire Farm."

Officers of the association believe that the value of live stock in St. Joseph County will be doubled in three years if purebred sires are used. The United States Department of Agriculture is cooperating in such efforts by supplying posters and information relating to the "Better Sires—Better Stock" campaign.

URGES PRESERVES TO PREVENT EXTINCTION OF FUR ANIMALS

Fur Supply of Country Being Diminished to Vanishing Point.

Wild Creatures Soon Learn Where They Are Safe From Molestation—Farming of Wild Fur Bearers Tried With Varying Success—U. S. Center of Trade.

Farming of wild fur-bearing animals and the establishment of large sanctuary tracts is urged by the United States Department of Agriculture as the only sure means of preserving the fur supply, which is being diminished to the vanishing point. Muskrats, skunks, foxes, and minks are among the animals which can be successfully bred in captivity or under conditions of semi-domestication.

Decrease in the supply of fur-bearing animals in the United States, coupled with a vastly increased demand, leads the department to urge domestication of the animals and the establishment of preserves where they may be safe from molestation.

To Prevent Extermination.

Unless fur-bearing animals are rigidly conserved, the Biological Survey declares in Department Circular 135, the time is not far away when many of the more valuable species will be exterminated and furs will be worn only by the very rich. This fact is said to be recognized by the fur trade generally, and by individuals who have made a study of the subject.

Directly or indirectly fur contributes to the support or comfort of a large part of the population of the United States. We import as much fur as we produce. In other words, we could sell at home twice as much fur as we are now producing, in addition to the foreign demand.

Since 1914, the center of the fur trade has been transferred to the United States. The greatest fur sales in history are now being held here, and all branches of fur dressing, dyeing, and manufacturing are being successfully carried on by American enterprise.

Most of the fur goods produced in America are manufactured in or near New York City, where in 1918 there were about 60 dressing and dyeing plants, 500 dealers, 1,200 manufacturers, 18,000 operatives, and an investment estimated at between $200,000,000 and $300,000,000.

Values of skins have risen to heights that have surprised even those on the inside, and skins that formerly had little or no value as fur became popular under various trade names. A comparison of the highest prices paid at the October sales in St. Louis in 1915 with those in 1919 illustrates the increase in fur values. Beaver advanced in these four years from $17 to $38.50; otter from $14 to $101; muskrat from 36½ cents to $5.10; red fox from $15.20 to $64; fisher from $25.50 to $205; skunk from $3.36 to $10.60; marten from $15.20 to $145.

Highest Prices Reached.

The crest of the rising wave of fur values was reached at the auction sales of February and March, 1920, when weasel brought $4.10; muskrat, $7.50; skunk, $12.25; raccoon, $30; lynx, $66; red fox, $71; mink, $75; otter, $105; marten, $201, and fisher, $365. The fur market has been greatly depressed recently, but its recovery to normal demand and prices in the near future is anticipated.

The Biological Survey cites the case of one man who bought a mink-lined coat complete in 1913 for $500; after wearing the coat two years he sold the lining for $1,000 and replaced it with nutria at a cost of $150; in 1917 he sold the nutria lining for $250 and put in a muskrat lining at a cost of $55; in 1919 he sold the muskrat lining for $300 and still has the shell of the coat and a clear profit of $845. Two boys near Ottawa, Ill., sold $1,000 worth of muskrat, skunk, and mink skins during the winter of 1919–20. Alaskan trappers in 1918 sold furs valued at $1,363,600. Skunk skins are estimated to have brought $1,000,000 to New York State trappers in a single year.

A fact not generally known is that the United States Government realizes millions of dollars annually from its fur industry. The sealskins taken on the Pribilof Islands by the Bureau of Fisheries in 1919, to the number of 27,821, were worth nearly $4,000,000. From these islands the same year the Government harvested 938 blue foxes, with pelts worth $165,000. The skins of bears, bobcats, coyotes, mountain lions, and timber wolves killed by predatory animal hunters of the Biological Survey in 1918 and 1919 brought nearly $160,000.

Foresees Greater Demand.

In the resultant stimulation of the fur-garment trade the department foresees an intensified pressure on fur-bearing animals, which have been rapidly decreasing in number as a result of excessive trapping, clearing of forests, and draining of marshes. Already beavers and martens have been exterminated over a large part of the country. Even in Alaska trappers have had a close season of several years, declared for the protection of beavers.

Reports from raw fur buyers indicate that fur-bearing animals have decreased approximately 50 per cent during the last decade. A raw fur buyer in Boston declared that the muskrat supply of 1918–1919 was 50 per cent short of normal, and the following winter had decreased another 50 per cent. In 1917, Wisconsin trappers took 800,000 muskrats; in 1918, less than 300,000; and in 1919, only 150,000.

The department urges stringent uniform State laws and close seasons over periods of years for the protection of species, but it believes that still further measures are necessary to preserve fur-bearing animals.

Department Circular 135 asserts that a greatly increased production can be made possible only by domesticating the animals, just as live stock are now raised, and by establishing preserves for them where they will be safe from molestation. Protected areas stocked with the best fur animals that can be found will become centers from which choice breeding stock can be obtained for establishing other preserves and for private use.

Soon Learn Places of Safety.

Wild creatures soon learn where they are safe from molestation. Wild waterfowl in city parks swarm around visitors who feed them as if they were domesticated. Wardens in Jasper Park, Alberta, say that as soon as the hunting season approaches many wild animals take refuge in the park.

Muskrat farming is a profitable industry in Maryland. Marsh owners in Dorchester County harvest from 100,000 to 125,000 muskrat skins a year. There is a market for the meat as well as for the fur. A single Baltimore firm handles 25,000 to 30,000 muskrat carcasses a year and is unable to supply the demand at that. One Maryland hotel has them on the bill of fare as "marsh-rabbit." Marshes that were considered valueless are now worth from $30 to $40 an acre for muskrat culture.

Experiments in propagating fur animals in confinement have been tried with varying results. The Department of Agriculture has already determined that silver foxes, black foxes, blue foxes, skunks, and muskrats can be farmed profitably under suitable conditions.

The department calls the attention of farmers to the desirability of keeping poachers off their forest lands and encouraging fur-bearing animals by preserving hollow trees and by substituting animal-proof chicken yards for the gun and trap in protecting their poultry.

It is to your best interest to put your Liberty Bond interest in War Savings Stamps.

FIBER CROPS SHOW INCREASE; GROWING METHODS DEVELOPED

Impetus to Hemp Growing Given by Work of Department of Agriculture.

Cutting Off of Supply from Russia and Other European Countries Partly Responsible for Increased Production in United States—Utilization of Hurds Studied.

Fiber crops in the United States show an increase this year, due largely to the growing realization of the American manufacturers of the cutting off of supply from Russia and other foreign countries, and the development of fiber-growing methods in this country.

Hemp and flax are the principal fiber crops in the United States. Of the former, 14,000 acres were grown this year, with an average yield of 700 pounds of fiber to the acre, divided about evenly between long fiber, worth on an average of 20 cents a pound, and tow, which now averages 10 cents a pound. This would bring the average value of the crop to $105 per acre, or $1,470,000.

Acreage Shows Increase.

Flax acreage has increased from 5,000 acres in 1919 to 6,000 in 1920. The yield is estimated at from 300 to 400 pounds of fiber per acre, worth 75 cents a pound. The flax crop is thus worth about $1,600,000.

Hemp growing has received considerable impetus since the United States Department of Agriculture undertook the work of breeding new strains and encouraging modern machine methods of handling, about 10 years ago. This shows an interesting geographical shift in hemp-growing territory. Kentucky, which formerly led, now stands lowest among the recognized hemp-producing States, while the lead has gone to the Northern States, Wisconsin supplying about half the total acreage. Next come Minnesota, Michigan, Ohio, Indiana, and California.

Kentucky's decline in relative position is due largely to the predominance of tobacco as a commercial crop, and partly to the fact that States coming newly into the hemp-raising industry have immediately adopted modern methods for large-scale production, while growers in a locality that has always produced one crop naturally cling to some extent to the old hand methods of their forefathers. There is an indication of increased activity in the Bluegrass State that may eventually put it again in the van in hemp raising.

The output is largely used for tying twine, but a new market has been found for a considerable quantity for mixing with flax in the manufacture of shoe thread. Formerly it was not thought that any material except flax could be used in shoe thread, but since the Russian supply was almost entirely cut off, manufacturers have found that they can combine the two fibers without material deterioration.

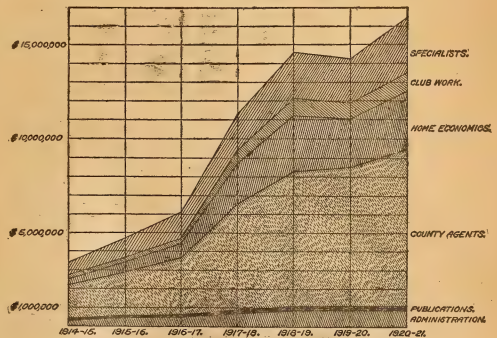
Utilizing the Hurds.

Much experimenting has been done with a view to utilizing the hurds, or woody center, which make up more than half of the hemp stalk. One Ohio factory used several thousand tons for paper manufacturing, but this use will need development in the way of shipping facilities and definite market. At present the hurds are mostly burned for fuel to operate the driers and furnish power for the breaking and scutching machinery.

Flax growing appears to be on the increase, due to the cutting off of the European product. The principal flax regions are Wisconsin, eastern Michigan, the Willamette Valley of Oregon, and northern Minnesota.

One reason corn has lodges so badly is that the corn is afflicted with a root disease which causes it to go down even in a slight storm. Experiments have shown that this disease is transmitted at least partly through the seed. The United States Department of Agriculture urges that seed be field selected from healthy stalks.

USE OF COOPERATIVE EXTENSION FUNDS.



From the beginning of the cooperative extension work under the provisions of the Smith-Lever Act, 50 per cent of the total funds available from all sources have been used for the work of the county agricultural agent. However, during the same period, the funds used for home-demonstration work have increased from 9 to 18 per cent and the funds used for club work have increased from less than 5 to more than 6 per cent. Thus, of the total funds available, 74 per cent is used in the direct work in connection with the agents located primarily within the counties. The proportion of the funds used for the employment of the subject-matter specialists, with headquarters at the agricultural college, decreased from 21 to 18 per cent. If the average expenditures for salaries and expenses of extension agents were the same now as at the beginning of the work under the Smith-Lever Act, practically all of the agricultural counties could have a county agricultural agent, and the majority a county home-demonstration agent, but with the present high salaries paid by the industries, the directors are unable to provide sufficient candidates at the salaries offered to fill the vacancies in the counties already employing agents, and have a list of counties with funds available, but seeking properly qualified agents. The present high cost of living and travel has also brought about a high cost of extension work with the result that though the increase in funds has been rapid the rate of increase of the territory covered in this work has slowed down materially.

Kill Alfalfa Weevil With Poison Spray—Method Found Practically Failure Proof

Farmers in regions newly infested by the alfalfa weevil will be interested in knowing that an unusually effective method of control has been worked out by the United States Department of Agriculture. Specialists of the department say that rarely has any method of insect control been so thoroughly safeguarded against failure as alfalfa-weevil spraying. It has been tested every season for seven years. The cost of the operation—about $1 an acre—is trifling compared with the returns, and no farmer in the territory infested or threatened can afford to overlook it, the specialists say. There is no control measure, however, which can be applied advantageously this late in the season. Effective work must be delayed until next spring.

Control by Poison Spray.

Control is effected by spraying poison over the fields so that it will cover the growing parts on which the weevils mostly feed. Arsenate of lead and arsenite of zinc have been mostly used, but other arsenicals recommended for orchard spraying are thought to be about as good. There is practically no danger of burning the foliage of alfalfa, and therefore the range of suitable poisons is larger than in fruit-tree spraying. Arsenate of lead is said to be, everything considered, the best poison to use, principally because it sticks to the leaves more readily and costs less than most of the others.

The poison is weighed or measured at the rate of 2 pounds of powder or 4 pounds of commercial paste for each 100 gallons of water, is stirred with a little water in a pail until it becomes a thin paste without lumps, is diluted and strained into the sprayer tank. Two pounds of laundry soap for each gallon should be added, in order to make the liquid stick to the leaves properly. The dry, powdered form of the poison is better than the paste. There is no danger of stock being poisoned by hay cut from sprayed fields where the poison is applied at a rate not greater than 100 gallons of spray mixture per acre.

Simple Outfit Sufficient.

The essentials of the spraying outfit are: A truck or other vehicle, a tank with an agitator to keep the poison from settling to the bottom, a pump, a pressure gauge, an engine and pumping jack, unless the pump is to be driven by hand, a strainer, a pipe for distributing the liquid from the pump, and as many nozzles as are required by the capacity of the pump. These essentials may all be contained in a barrel-pump outfit carried in a wagon. The pump must be capable of delivering four-fifths of a gallon or more a minute and maintaining a pressure of at least 75 pounds. If the pressure is less than that, the mist spray will not be fine enough to prevent the liquid from gathering in drops and running to the ground instead of drying on the tops of the plants.

The number of nozzles used should be sufficient to take up the capacity of the pump. At the average walking gait of a team, each nozzle should deliver nine-tenths of a gallon a minute. Therefore, a pump of 9-gallon capacity per minute will supply 10 nozzles, each of which covers a strip 2 feet wide. By an arithmetical calculation of the cubical content of the pump cylinder and the number of strokes per minute, the capacity of the outfit can be determined. The spray should be applied at the rate of 100 gallons of spray mixture per acre.

Nearly any kind of spraying outfit can be adapted for this purpose. However, modern orchard spray outfits are usually designed to give a comparatively small flow and high pressure and are less suitable for alfalfa spraying than the older pumps, with larger cylinders and longer stroke, designed for larger flow and lower pressure.

Keep Liquid Well Stirred.

The spraying outfit should be mounted on the wagon or other vehicle used so that the nozzles will be about 2 feet above the tops of the alfalfa plants. Four 50-gallon barrels with an engine and pump mounted on an ordinary wagon, or, for a hand-pump outfit, an express wagon and fewer barrels constitute a satisfactory outfit. A paddle, dasher, or some other form of agitator must be provided to keep the liquid stirred. A strainer of 20-mesh brass or bronze screen should be fitted to the opening through which the water enters the tank and another over the outlet leading to the pump. The parts of the pump in which close fitting is required should be of brass, bronze, porcelain, or some other substance less rapidly corroded by the chemicals than are iron and steel. All commercial spray pumps are built in this way, but pumps which were intended for other purposes should be refitted when used for spraying.

An engine-driven outfit must have a relief valve near the pump, permitting the surplus flow to return to the tank. The pump must have an air-pressure chamber large enough to keep the flow steady and insure even distribution of the poison. Even pressure, indispensable for uniform spread of the poison, can not be maintained without a pressure gauge. This gauge should be attached to the pressure chamber or near it and at a distance from the relief valve and the nozzles.

The boom or pipe which carries the nozzles and supplies them with liquid from the pump is made of 2-foot pieces of one-half inch galvanized iron pipe joined by T's, each of which affords an opening for the attachment of a nozzle. The boom is connected with the pump by a one-half inch pressure hose. The boom should be supported by a piece of timber, 2 by 4, clamped or hinged to the truck with the boom stapled, bolted, or wired to it. Plain misty nozzles, without strainers or other complications, should be used.

Spray in Warm Weather.

The best time for spraying is at what the specialists call the turning point of weevil infestation—from one to two weeks before the first crop is ready for cutting, when the young larvae become so numerous that they completely destroy the growing tips. After that point is reached the weevils, if left alone, consume the leaves until nothing is left but the woody fibers. If spraying is done at this time the crop recovers quickly. Spraying yearly in the spring sometimes entirely prevents damage, but it is uncertain. On the other hand, plants sprayed after they were entirely stripped of their foliage have been able to recover and bloom, but this allows destruction to go too far and makes recovery too slow.

Spraying at the "turning point" not only protects the first crop but confers an even larger benefit on the second crop, which sprouts and grows without delay, and no treatment of the stubble is necessary.

Stubble spraying, after the cutting of the first crop, has been successfully done, but it requires getting into the field immediately after cutting and a much larger quantity of liquid is required than if it were applied to the first crop. Stubble spraying, therefore, is advised only when earlier spraying has been impossible.

Spraying should be done, if possible, at the beginning of a warm spell. The weevils do not feed so voraciously in cool weather and if the poison is applied at the beginning of a cool spell it may become largely impotent before the weevils resume feeding freely. When spraying is

done under favorable weather conditions most of the weevils are killed within four or five days.

There are other control measures, but none of them promises much unless applied before or immediately after the first cutting. One method is to pasture the alfalfa field until most of the eggs and young larvae have been destroyed. Another is to use the alfalfa as a soiling crop, cutting it green two or three times during the season. These methods, however, must be practiced before the turning point of infestation, as after that time the weevils destroy the plants so completely that there is not enough growth for either pasture or soiling. Another method is to cultivate the field with a harrow or other implement, immediately after the first cutting, in such way as to cover the field with a dust mulch, thus exposing the entire surface of the field to the sun and killing most of the weevils. In some instances, the second crop has been protected by dragging the stubble, while it is still wet from irrigation, with the land leveler or the clod breaker. This causes the insects to perish by embedding them in the mud, but it is harmful to the soil and is not recommended.

White Sweet Clover for Forage—Find Red Variety Self-Sterile

Red clover, recent investigations have shown, is practically self-sterile; that is, under the influence of its own pollen a very small number of seeds on a given plant will set. In this respect it differs from white sweet clover, which tests have demonstrated will set nearly as many seeds under the influence of its own pollen as it will with the pollen of another plant. This makes the breeding of white sweet clover a much more promising undertaking than the breeding of red clover. These facts have been brought out by recent experiments conducted by the United States Department of Agriculture in cooperation with Iowa State College. The Federal department's investigators plan to follow up these discoveries with the selection and breeding of white sweet clover for increased forage and seed production.

It was also found that sweet clover needs a great deal of moisture to mature the seed properly. This is one of the reasons why the second crop of sweet clover sometimes has a better seed yield than the first. There being a smaller amount of growth on the second crop, the plants do not draw on the water supply so strongly and there is more water left for the maturing of the seed.

Visiting a Live-Stock Show in Brazil—Specialists Tell of Breeds and Types

Striking comparisons between the stock at the National Live-Stock Exposition of Brazil and typical large live-stock shows in the United States are contained in an official report to the United States Department of Agriculture from its two live-stock commissioners now in South America. These men are L. B. Burk of the Bureau of Markets, and E. Z. Russell of the Bureau of Animal Industry. The exposition was held July 4 to July 11 at Rio de Janeiro, Brazil, and is the principal annual event of its kind. It is managed by the National Society of Agriculture, an association financed partly by the Government and partly by membership. Approximately 5,000 members pay a fee of $5 annually. The exposition is strictly a live-stock show; no other exhibits are on the grounds. Following is an extract of the report:

Cattle Division Attractions.

"The principal attraction was the cattle division, in which there were about 700 head. The Zebu breed leads in numbers and popularity, there being about 300 of these animals on the grounds. Other breeds shown were Herefords, Shorthorns, Aberdeen-Angus, Red Polled, Brown Swiss, Holstein, Jersey, Dutch Belted, Guernsey, Devon, and the native Caracuo. A few splendid individuals of each of these breeds were shown, but there were also many common ones.

"The Caracuo or National cattle were represented by excellent individuals, and they were in good condition. The bulls were very heavy in bone and would weigh about 2,000 pounds, the cows weighing about 1,400. They are coarse in quality, but are hardy and produce very good beef. In type they resemble more nearly the Shorthorn breed, but are somewhat longer in body and coarser in quality of head and bone. They have long, coarse horns and are of a reddish-fawn color.

The Swine Exhibit.

"There was a total of 147 hogs on the grounds, divided among breeds as follows: Duroc-Jersey, 69; Poland-China, 28; National, or native breed, 14; Large Blacks, 11; Berkshires, 10; Crossbreds, 8; Barrows (crossbreds), 6; Spotted Poland-China, 1.

"The best individuals were found in the Durocs, some very creditable animals being shown. Some of them had been brought from the States; others were home-bred from imported sires and sows. The grand champion animal was a Duroc-Jersey yearling boar, shown by the Lavras Agricultural College. He was home-bred from imported parents and sold for $500.

"Hogs of the National or native breed are either red or black. If they are given time enough they make a good weight. Some barrows or stags were shown weighing about 800 pounds. Generally they are of fair length, sway backed, rough head, poor eyes, bones of medium size, and poor feet. They are fairly prolific, but are not breeding true to any type or color.

"The Large Blacks were of fair size, smooth, a coarse head with ears pointed and coming to the end of the nose. They are generally well developed in the back and are of good depth. The Crossbreds were a mixture of the Nationals, Duroc-Jerseys, and Poland-Chinas, yet in quality they ranked ahead of many of the others except the Durocs and Poland-Chinas.

Cattle Center of Interest.

"The attendance at the show was not large, and interest centered around the cattle much more than around the hogs. It was exactly as it used to be in the shows in the States in the earlier days. A large proportion of the attendance was composed of city people, which is not to be wondered at when one considers that on many of the lines of railroads they have train service but every other day.

"The horse part of the show was very small compared with shows in the States. There were a few small stallions, evidently grades. The horses raised are for saddle purposes. A few mules were shown of the size and quality used on the streets.

"There were about one-half dozen Lincoln sheep of good quality. The sheep business does not seem to be developed to any great extent in the region near Rio de Janeiro."

Kentucky once led in hemp production, but has turned to more profitable crops and relinquished the lead to Wisconsin, according to the United States Department of Agriculture. The Badger State cultivated 7,000 acres, half the country's total, this year, followed by Minnesota, Michigan, Ohio, and California, with Kentucky sixth.

Weekly News Letter

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SOLICITS AID OF BREEDERS IN BUILDING UP S. A. MARKET

D. S. Bullock, recently appointed Live-Stock Commissioner to South America by the Bureau of Markets of the United States Department of Agriculture, has started on a trip through the middle West which will last a month or six weeks. During this trip Mr. Bullock will visit the headquarters of practically all the breed associations of the country. The purpose of this will be to call attention to the fact that the Bureau of Markets is planning to establish a permanent trade consulate—probably at Buenos Aires—which will have for its main object the development in the southern continent of a market for live stock bred in the United States. He will solicit the cooperation of the breed associations in this work.

According to present plans, Mr. Bullock will return to Washington, D. C., early in December and start for South America around the first of the year.

FALLING CROP PRODUCTION PER CAPITA, REPORTS SHOW

Crop production in this country in 1919, as estimated by the Bureau of Crop Estimates of the United States Department of Agriculture, was 11 per cent above the average of the prewar years 1910–1914, and this was not previously equaled except in 1915, when the production was 16 per cent above the average. Late in the growing season of 1920 the production of crops was apparently 13 per cent above the average.

A tale of another sort is told when crop production is compared with population. During the last 30 years the largest per capita production was in 1898, when it was 12 per cent above the average of 1910–1914. In most of the years from 1896 to 1915 per capita production was above the average. The highest point, however, reached since 1915 has been the average of the five years mentioned, and this was done in 1917 and apparently in 1920. Notwithstanding the great mass of the crops of 1920, they are, after all, no greater than the average when compared with the great mass of an increasing population.

SECRETARY MEREDITH BUYS BABY BEEF FROM CLUB MEMBER

When Secretary of Agriculture Meredith attended the Eastern States Exposition this fall, about the first place he visited on the grounds was the arena where that day the prize calves of the club boys and girls were being auctioned off.

Within 20 minutes after Secretary Meredith had entered the grounds he had bid in the Hereford calf which had won the second prize at the exposition. He has sent the calf to his Iowa farm.

Each member in the calf clubs, which are organized by the United States Department of Agriculture and the State colleges, owns the calf which he cares for and feeds under the advice of his club leader. The calves which won the county prizes then compete for State honors, and at the Eastern States show the 10 Eastern State winners competed against each other. When the awards are finally made an auction of the animals is held.

GIVES FACTS ON HEREDITY AND LIVE-STOCK BREEDING

Written in simple language for the person who raises farm animals, a new farmers' bulletin, just issued by the United States Department of Agriculture, tells the basic facts about heredity and how live-stock improvement may be brought about. Under the title "Essentials of Animal Breeding," this publication places before farmers and stockmen information which heretofore has been available chiefly in books, many of them being of technical character.

Topics explained and illustrated by the new bulletin include: Beginnings of life, evolution, Mendel's law, determination of sex, inbreeding, crossbreeding, outcrossing, pure breeding, pedigrees, grading up, and maternal impressions. Certain popular but incorrect ideas about heredity are discussed.

Several series of pictures show how good blood "breeds on" and likewise how inferior parents stamp undesirable characteristics on following generations. The discussions deal with all the principal classes of domestic animals, and a summary of basic principles concludes the bulletin which contains 40 pages. Copies may be obtained free of charge by application to the Division of Publications, United States Department of Agriculture, Washington, D. C.

For experienced breeders and for others who desire more detailed information than that contained in the farmers' bulletin, the Department of Agriculture is preparing another bulletin entitled "Principles of Live-Stock Breeding," which goes more deeply into the subject. This literature, prepared in connection with the "Better Sires—Better Stock" campaign, adds to the completeness of the series of Government publications pertaining to live-stock raising. In fact, the department is now prepared to furnish interested persons literature on practically all problems of live-stock production and improvement.

TACTFUL HANDLING OF SKUNK MAKES HIM VALUABLE ON FARM

Few persons have seriously considered establishing friendly relations with a skunk. It has been done in some cases under the misapprehension that the animal was a cat, and the results have been unpleasant. But the Biological Survey of the United States Department of Agriculture has investigated the skunk and found him to be the best wild-animal friend the farmer has.

Almost any farmer might have 2 or 3 dozen skunks at work for him destroying mice, grasshoppers, crickets, and white grubs, and furnishing him from $50 to $100 worth of fur a year. All that is necessary is that he respect their dens, keep his poultry in skunkproof yards, kill an old horse for them every fall, and be tactful when he meets them in the evening. There is a marked depression of the fur market at present, but recovery to normal is anticipated.

It has been estimated that a year's catch of skunks in New York State is worth $1,000,000. Only one-fifth of them are black or short striped. If all were of this higher grade, they would be worth $3,000,000. The department suggests that a preserve stocked with black skunks would eventually double or treble the catch of skunks in the territory surrounding it.

Making Uncooked Pork Safe for Food—Dainties Tempting Despite Physicians

Hygienically, the custom of eating uncooked pork and pork products is regarded by medical specialists as very much to be discouraged; but the toothsome summer sausage, smoked sausage, pepproni, pickled sausage, and a number of other dainties continue to tempt the American public to defy the physicians.

Facing this situation, the United States Department of Agriculture has conducted a long series of experiments to ascertain what treatment, other than cooking, will thoroughly destroy trichinae and render the foods safe for consumption. The result of the experiments is made public in Department Bulletin 880, just issued.

The experiments proved of double service. In addition to fixing the safety point in the various methods of curing pork without cooking, they cut down the time consumed in the processes in some cases as much as five days, permitting considerable saving in the cost of manufacture.

Effects Little Known.

Prior to these investigations comparatively little was known concerning the effects of processes used in curing pork upon the vitality of trichinae, which cause the dread disease trichinosis.

It has been assumed as a governing principle that the consumer is himself responsible for the proper preparation of fresh pork and pork products that are usually cooked before eating, but that the manufacturer is under obligations to make sure that pork products sold as cooked products are properly cooked, or, if of a kind customarily eaten without cooking, to make sure that the products are free from live trichinae.

In the Federal meat-inspection regulations it is therefore provided that products cooked in establishments under inspection must be cooked in accordance with methods approved by the Bureau of Animal Industry; and, further, that products containing any raw muscle tissue of pork, if of a kind prepared customarily to be eaten uncooked, must either be subjected to sufficient heat to destroy the vitality of trichinae or must be subjected to some other process which would accomplish the same purpose.

New Methods Devised.

Most of the department's experimental work was carried out in cooperation with certain meat-packing establishments in Chicago. The investigators selected the methods of preparing pork without cooking that seemed likely to be efficacious in destroying trichinae and at the same time suited to practical requirements of manufacture. Several new methods were devised.

These methods were tested by preparing the products from trichinous pork and then feeding the finished product to experiment animals to see whether the trichinae survived. Detailed records were kept of every step of the process.

The investigation shows that pork products of the kinds customarily eaten without cooking may be rendered safe for consumption, so far as trichinosis is concerned, but that it is necessary to follow a special curing process adapted to each. Salt is an essential in most of the processes.

Sausages of moderate size have been rendered harmless by mixing not less than 3½ pounds of salt with every hundredweight of meat, followed by preliminary curing and then by drying. After the salt has been introduced, the sausages must be dried at least 20 days in a temperature not lower than 45° F. A period of 5 days is allowed for preliminary curing, which may be curtailed, provided the time in the drying room is correspondingly increased.

In the case of pepproni, which are sausages stuffed in long, narrow, thin casings, it was found feasible to reduce the curing period to 20 days, of which at least 15 days must be given to drying.

Smoked sausages may be rendered harmless by being subjected to a preliminary cure and then smoked at temperatures ranging around 80° F. for 40 hours, followed by drying for 10 days. Sausage smoked at a temperature of 125° to 130° F., for a relatively brief period, following a preliminary curing period of 6 days, is rendered harmless without subsequent drying.

Two Methods for Ham.

Hams are rendered free from trichinae by two methods. One is to cure them with dry salt—4 pounds or more to the hundredweight—for a period of 40 days, and then smoked or pale-dried for 10 days at a temperature not less than 95°. The second method is to cure them on the basis of 3 days for every pound of meat, followed by 48 hours of smoking at a temperature of not less than 80°, and finally by 20 days' drying at a temperature not lower than 45°.

Salt and suitable temperatures are the principal means of destroying trichinae. The former gradually undermines the vitality of the parasites, probably by withdrawing water from their tissues, and also perhaps by direct toxic action. Salt furthermore lowers the resistance of the larvae to heat and thus renders them susceptible to temperatures which otherwise would not prove fatal. Drying is also a decided factor in bringing about the destruction of trichinae.

MAY SEND REPRESENTATIVES TO LONDON POTATO EXHIBIT

Tentative acceptance of the invitation of the Royal Horticultural Society for the United States Department of Agriculture to be represented at the potato exhibition conference to be held in London, England, in 1921 has been forwarded to the secretary of the society by Edwin T. Meredith, Secretary of Agriculture. Definite date for the conference has not been set, but it is expected that it will be held late in November or early in December. In his reply, the Secretary said:

"As the potato crop is one in which this country is keenly interested, and as the discussion of different phases of potato production, such as the breeding of varieties, the control of destructive diseases and insects, and other related questions, would undoubtedly develop useful information for our potato growers, I trust that it may be possible to have one or two of our specialists present at the conference. In the event that this can be arranged it is probable that they could take with them some specimens illustrating progress in our potato industry which would be of interest and value to those attending the conference."

The invitation from the British society was made also to the staffs of the various experiment stations in the different States, with the assurance that their assistance would be welcomed. Although no definite arrangements have been made by the department, it is probable that one of the horticulturists of the Bureau of Plant Industry will be selected, together with a member of the bureau's pathological staff.

Potato production is more evenly distributed among the various sections of the United States than is generally supposed, if the early as well as the late crop is taken into account. In the average of the four years 1916–1919, the North Atlantic States produced 28 per cent of the crop, the North Central States east of the Mississippi River 22 per cent, those west of that river 18½ per cent, the Rocky Mountain and Pacific States 16 per cent, the South Atlantic States 10 per cent, and the South Central States 6 per cent.

To Drive Out Dwarfs in Live-Stock World—Asks Breeders for Data Concerning Runts

A plump little pig is a porker
But a puny pig is a runt.

It is strange that breeders have not made a more extensive study of the runt animal than is indicated in the two lines, but the truth is that no one knows exactly why the runt appears among our domestic animals. The United States Department of Agriculture has set itself to the task of finding out how often the runt occurs and what are the causes of his appearance. As a base upon which to build the runt investigation, the Bureau of Animal Industry is asking 1,000 prominent American breeders to contribute all that they have learned about the dwarfed animal.

Through effort and study many phases of breeding have come to the point of science. There are other mysteries that still baffle investigators. The Department of Agriculture does not consider the runt question unsolvable.

Is the runt an unavoidable result of a natural law or is it chiefly the product of careless breeding, of poor feeding, or of neglect to protect it from parasites and disease? The Department of Agriculture proposed to find out, and the Bureau of Animal Industry is preparing to conduct a campaign against it.

Seeks Data from Breeders.

A questionnaire has been sent out to American breeders upon which they are asked to submit their own observations and deductions. The results will be compared with data which the bureau has been gathering from experiments and other sources. It is already known that certain conditions of feeding and breeding will tend to produce a runt, but information to enable one to guard against these conditions is needed, and it is hoped that the breeders will be able to assist in solving these problems through their experiences.

The elimination of the runt, or a decrease in his numbers, is aimed at by the Bureau of Animal Industry in connection with the "Better Sires—Better Stock" movement. There is never so much profit in a runt as in a normal individual. The runt requires more care and as much barn room as any other animal, while the inferior quality of its flesh gives it a lower market value. Undoubtedly a large amount of money is lost by the farmers every year on account of feeding and caring for runts. The questionnaire is reproduced below. Any breeder who does not receive a copy direct from the bureau is urged to take the questions from this announcement and answer them. The more replies the more valuable will be the results of this study. Your letter to the Bureau of Animal Industry will be welcomed. The questions follow:

1. From your experience, in what classes of live stock do the most runts appear (horses, cattle, hogs, sheep, etc.)?

2. How many of your farm animals (excluding poultry), on the basis of every 100 born, are runty, undersized, or of inferior development?

3. Mark the three principal causes, in your opinion, of runty stock.

- Inferior breeding.
- Parasites (lice, worms, etc.).
- Contagious disease.
- Inadequate or unsuitable feed.
- Lack of adequate housing or care.
- Exposure.
- Accident.
- Other causes (mention the most important).

4. In what stage of the animal's development (infancy or before weaning, shortly after weaning, or later) does runtiness chiefly begin?

5. In your own experience what are the most practical ways of preventing runts? Give details.

6. Does it pay to try to raise runts to market size?

7. To what extent would your financial returns from live stock be increased if you had no runts? (One-fifth, one-tenth, one-twentieth or other fraction of percentage.)

8. Make comments stating whether you believe runty live stock can be reduced in numbers and give actual instances in which animals which showed runty indications developed into normal size.

9. Give the proportion of runts in your poultry flock. Mention the chief cause and best prevention.

Address your letter containing the foregoing information to the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

TELLS HOW TO SELECT BEEF CALF FOR VARIOUS PURPOSES

For the prodigal who has finally turned away from growing inferior, unprofitable, and uninteresting live stock the United States Department of Agriculture has prepared a special farmers' bulletin, No. 1135. Under the title "The Beef Calf: Its Growth and Development," this new publication, written principally for young farmers, tells how to select a beef calf and raise it either for market or for use as a breeding animal.

The bulletin is a response to an unusual demand by members of boys' and girls' clubs for specific information on the principles and practices of raising well-bred calves, preparing them for show or sale, and disposing of them to advantage. Desirable and undesirable types of calves are discussed and illustrated.

There are chapters on equipment needed, keeping the calf healthy, feeding, and the importance of changing the ration as the animal develops, also methods of preventing parasites and disease. The bulletin describes clearly how to clip, curl, or otherwise prepare the coat of the various breeds of cattle preparatory to showing them, with additional directions regarding shipping and exhibiting. Persons desiring such information should write to the United States Department of Agriculture, Washington, D. C., for Farmers' Bulletin 1135.

DAIRYMEN MAKING WIDE USE OF PUREBREDS IN INDIANA

In Harrison County, Ind., where the "Better Sires—Better Stock" movement is gaining headway, dairymen are making wide use of good, purebred bulls in an economical manner. By fractional ownership of the bulls they receive the benefit of such sires without incurring the entire purchase cost. In one day recently the United States Department of Agriculture received statements from three dairymen in Harrison County, all of whom follow the practice mentioned. The advantage of a choice of several sires is the wider opportunity to make desirable matings, thus hastening progress in grading up a herd.

In many other localities dairymen are combining their forces, sometimes with the object of testing bulls before sending them to the block, sometimes to save expense, and sometimes to give local predominance to one breed or another. An informal combination of this sort is often highly useful.

This is not the same thing as a bull association. The cooperative bull association is an institution designed to accomplish these and many other objects, on a larger scale, by a form of organization which has been extensively tried and perfected by experience. It is recommended by the department that farmers should give consideration to the benefits they can secure for themselves by a closer and more effective union of interests in a properly organized bull association.

Tells How to Waterproof Cotton Duck—Protection Against Mildew Adds Life

Cotton duck, otherwise known as canvas, is used extensively for the protection of machinery, sacked grain, shocks, stacks, and ricks; for wagon and truck covers, for awnings and temporary shelters, for horse covers, and for catching grain that falls to the ground during thrashing. Undoubtedly it would be used to a greater extent if it fulfilled more effectively these various purposes and if it retained its serviceability for a longer period than it ordinarily does.

In Farmers' Bulletin 1157, recently issued by the United States Department of Agriculture, directions are given how to select and care for duck or canvas on the farm and describes simple methods for prolonging its period of serviceability by the application of waterproofing and mildewproofing treatments.

Cotton Duck for Farm Use.

For farm purposes unbleached, unsized, closely woven duck only should be used. It should not be too stiff, however, nor so closely woven that it has no flexibility when wet and cold, in which case it has a tendency to crack when creased or folded. Furthermore, stiff canvas is very difficult to handle, and, when used as a cover, does not shape itself properly to objects, as a result of which it does not give them adequate protection. For horse covers a moderately stiff canvas is preferable, as it does not lie close to the body of the animal and does not cause sweating as readily as the more flexible kind.

For large wagon covers or paulins No. 8 duck, which weighs about 18 ounces per square yard, or 15-ounce United States standard army duck, weighing about 18.9 ounces per square yard should be used.

For small wagon and machine covers or tents either No. 10 or 12-ounce United States standard army duck is suitable, as both have sufficient body without being too stiff when wet. No. 10 duck weighs about 14.7 ounces and 12-ounce United States standard army duck about 15.2 ounces per square yard.

For shock and other small covers, No. 12 duck, weighing about 11.5 ounces per square yard, or 10-ounce United States standard army duck, weighing 12.6 ounces per square yard, is satisfactory.

It is more economical to buy a good grade of duck, even at a decidedly higher first cost, than a cheap duck which is of light weight and poorly constructed and which will not prove serviceable.

Care of Cotton Duck.

The deterioration of cotton duck is due to a number of causes, the chief one being mildew, which usually appears when the canvas remains damp for several days in warm weather. Mildew is readily recognized by the appearance on the canvas of white, black, yellow, pink, or green spots, varying in size from that of a pinhead to that of a 5-cent piece. Canvas may be injured also by bacterial action, which produces no marked change in the color, but weakens the entire fabric. This occurs when the canvas has lain for some time in contact with the ground or a damp floor. In addition canvas may be weakened by the chemical action of materials in it or by the action of air and moisture alone under the influence of sunlight.

Wet or even damp canvas should be dried as soon as possible by being spread out over a wagon or hung over a wooden fence or a large pole, preferably in the sunshine, until it is thoroughly dry. If the weather is wet, it may be hung under a shed or in the barn. No canvas, bags, etc., should be folded or stored while damp. Folding of heavy canvas, especially if it has been stiffened by a waterproofing treatment or by being wet or frozen, may weaken or crack the fabric, causing it to leak. For this reason heavy canvas when not in use should hang over a beam or large horizontal pole, or should be suspended against the inside of a barn or shed rather than folded.

Formulas Found Satisfactory.

After thorough tests, both in the laboratory and in the field, the United States Department of Agriculture has found that the following formulas, which have been developed in the course of its investigations, are very satisfactory for increasing the serviceability of cotton duck. It is believed that they will meet the requirements of the farmer and ranchman and others using canvas for outdoor purposes. These formulas are designed solely for use in waterproofing and mildewproofing treatments. While the department believes that the formulas here given do not infringe on any existing patents or pending applications for patents, it can assume no responsibility in the matter.

	Pounds.
Formula 1:	
Amorphous mineral wax or crude petrolatum	7½
Yellow beeswax	1
Refined Bermudez Lake asphalt	1½
Solvent: 3 gallons gasoline and 2 gallons kerosene.	
Formula 2:	
Petroleum asphalt (medium hard) or Bermudez asphalt	6
Neutral or extracted wool grease	2½
Lead oleate, technical	1½
Solvent: 3 gallons gasoline and 2 gallons kerosene.	
Formula 3:	
Amorphous mineral wax or crude petrolatum	8½
Yellow beeswax	1½
Solvent: 3 gallons gasoline and 2 gallons kerosene.	
Formula 4:	
Amorphous mineral wax or crude petrolatum	6½
Yellow beeswax	1½
Lead oleate, technical	1½
Solvent: 3 gallons gasoline and 2 gallons kerosene.	

Mixing the Materials.

Weigh out the solid materials in proper proportions, place them in a kettle or can, and melt slowly and carefully at as low a temperature as possible, with constant stirring. When the mixture has completely melted, remove to a safe distance from the fire, and pour it slowly, with constant stirring, into the proper quantity of solvent (a mixture of 3 parts by volume of gasoline and 2 parts by volume of kerosene), using 5 gallons of this solvent to 10 pounds of the mixture. This should be done with free ventilation, preferably out of doors.

In the preparation of mixtures by formulas 1 and 2 there is sometimes a separation of asphalt that does not mix uniformly with the solution upon stirring or shaking. In such cases allow the mixture to stand a day or so, with occasional stirring, before applying it to the canvas. In other cases where the material settles to the bottom of the container or thickens it will be necessary to warm the mixture just before applying it to the canvas. This must be done in the open air by placing the open container in a tub or can of hot water. Be sure that the container is open, and never place it over or near a flame.

Applying the Mixture.

The mixture must be thoroughly stirred before and during application, in order to keep the undissolved material in suspension. These preparations may be applied to the canvas by means of a paint brush or by spraying. Wagon covers, shock covers, etc., may be treated best by stretching the canvas against the side of a barn or attaching it to a frame and applying the material with a brush. Once the canvas is fixed in position, no more time is required to treat it than is

necessary to apply a first coat of paint to a rough board siding having the same area. Much time may be saved in treating large pauline and standing tents by applying the material with a spray pump, with which a pressure of at least 50 pounds is developed. Some loss of material, however, results from this method.

The experience of the department has been that one coat applied to one side of the canvas usually is sufficient. When one coat is applied to one side, using the strength of solution as given in the formulas, there will be an increase in weight of from 3¼ to 4½ ounces per square yard. Ten pounds of the material and 5 gallons of the solvent will treat about 40 square yards of canvas.

FLORIDA LED PRODUCTION OF TURPENTINE IN 1919–20

The Bureau of Chemistry, United States Department of Agriculture, which for several years has been collecting periodical statistics on the production and stocks of turpentine and rosin, makes public the figures showing the production of gum turpentine and gum rosin during the 1919–20 season by States. The information is given in the following table. The unit for the figures for turpentine is the cask of 50 gallons; for rosin, the round or still barrel, as produced, of approximately 500 pounds gross weight. In all cases fractions of a hundred barrels have been dropped or raised to the next higher hundred, depending on whether the figures were below or above 50.

Distribution of 1919–20 gum turpentine and Rosin production, by States.

State.	Turpentine production.	Per cent.	Rosin production.	Per cent.
	Casks.		*Round barrels.*	
Alabama	38,100	10.4	126,000	10.2
Florida	136,900	37.4	457,500	37.0
Georgia	73,900	20.3	250,600	20.3
Louisiana	68,700	18.8	232,000	18.7
Mississippi	29,500	8.0	102,800	8.3
North Carolina	600	.....	2,200	.....
South Carolina	1,100	.5	3,400	.5
Texas	17,200	4.7	62,500	5.0
	366,000	100.0	1,237,000	100.0

On comparison with the bureau's report on the production during the season of 1918–19, the above figures indicate that the production last year was less in Alabama, Mississippi, and Texas than in the previous year, while it was greater in Florida, Georgia, and Louisiana. The combined production of North Carolina and South Carolina was also a little less last year. The total production for the 1918–19 season, as given in the bureau's report, was 341,000 casks of gum turpentine and 1,115,000 round barrels of gum rosin. Of the 1918–19 crop, Alabama produced 12.2 per cent; Florida, 37.1 per cent; Georgia, 19.2 per cent; Louisiana, 15.3 per cent; Mississippi, 9.6 per cent; North Carolina and South Carolina, 0.4 per cent; Texas, 6.2 per cent.

Cowpeas Valuable as a Rotation Crop—Succeed Especially on Good Corn Land

While cowpeas do best on sandy loams, they succeed on practically all types of well-drained soil, according to specialists of the Bureau of Plant Industry of the United States Department of Agriculture. No other legume can be grown so successfully and on such a variety of soils under adverse conditions as the cowpeas. A very rich soil is not conducive to the best results with the crop. Good corn land is considered particularly favorable.

A Warm-Weather Crop.

The cowpea is a warm-weather crop. It has the greatest value in the Southern States, gradually lessening northward. It is grown, however, in the southern parts of Ohio, Illinois, Indiana, and New Jersey, and in parts of Michigan. In general, the cowpea is adapted to about the same climatic conditions as corn. It requires somewhat more heat, however. It will stand a considerable degree of drought, but under very dry conditions will produce only a moderate quantity of hay and a very small number of seeds, if any.

In the Southern States the cowpea is the best known and most extensively grown leguminous crop. It is grown mainly for forage and to improve the soil. The seeds, in addition, are rather commonly used for human food. As a catch crop and for hay or seed production cowpeas are especially valuable in almost any system of rotation. In many sections of Missouri, Arkansas, and Tennessee a rotation of wheat or oats and cowpeas has given good results. On farms where live stock is kept the following rotation is very popular: First year, cotton; second year, corn, with cowpeas at the last cultivation; third year, winter oats or wheat, with a catch crop of cowpeas for hay or seed after the grain has been removed.

In sections devoted to growing tobacco a seven-year rotation of tobacco, wheat, two years of grass, corn with crimson clover as a cover crop, cowpeas, and red clover, has been recommended by a State experimental station. A good rotation in the corn belt on land where corn and wheat or oats are regularly grown consists of corn, soy beans, wheat, and clover, with cowpeas for hay when clover fails. Cowpeas are to be recommended also as a crop to precede alfalfa.

Farmers' Bulletin 1148, Cowpeas: Culture and Varieties, now issued by the United States Department of Agriculture, contains much valuable information on the growing of cowpeas. Copies may be had upon request of the department at Washington, D. C.

EFFECTIVE WAYS OF GETTING RID OF THE ARGENTINE ANT

From Texas to the Atlantic, in scattered localities, the Argentine ant, in dark brown hordes, attacks gardens, ruins orchard and truck crops, and even swarms into the houses, making conditions in some cases so unbearable that their inhabitants leave.

The pest is carried by rail in food stuffs, and since its original introduction, presumably from Brazil, it has been distributed about the country until infestations occur throughout the South, with a separate group of infestations in California. It may also be carried by floods such as occur in the Mississippi Valley, the ants forming themselves into a compact ball that floats to safety.

The nurseryman, the trucker, and the orange grower are greatly molested by this pest, owing to the fondness of the ant for the honeydew excreted by aphids and scale insects. The worker ants take the best possible care of these honeydew-yielding species, and protect them from their natural enemies. They frequently build shelters over them, and as the host plants grow, carry the young scales and aphids and place them on the young tender growth, where they may more easily sap the juices of the plants.

In corn, cotton, and sugar-cane fields, the Argentine ant when present is constantly attending the aphids of mealybugs, increasing the number of these species to an alarming degree, much to the detriment of the plants.

Farmers' Bulletin No. 1101, The Argentine Ant as a Household Pest, issued by the United States Department of Agriculture, gives methods of control which entomologists in the department have found effective.

Gives Up Ditch Digging for City Job—Power Trencher Comes to Farmer's Aid

"No, Mister. Aye ban too smart faller for dig ditch. Aye ban go to the city an' get smart faller's yob."

Thereupon Olaf laid down his long bladed ditching spade, said good-bye to his former employer, and clumped stolidly away. That his "city yob" called for only enough intellect to enable him to screw a half-inch nut on a half-inch bolt every time an automatic machine presented them to him, and that he performed the same operation 1,200 times a day, is of little interest to the farmer who wants a drainage ditch dug and can find no one to dig it. As a matter of fact, ditch digging is a science. To cut the sides smoothly and grade the bottom truly requires more skill than to set nuts in an automobile factory, and Olaf and his brothers knew how to do it. They had learned their trade in the old country and could make good pay ditching an American farm at a dollar a rod. But they have been attracted to work in the city, and so the farmer must look for other means to dig his ditches and lay his tile.

Power Trencher Saves Time.

At this juncture the power trenching machines, capable of digging from thirty to ninety rods of tile trench 3 feet deep in a single day, comes to the front and demands consideration. It doesn't cost any more to dig a drainage ditch with a properly handled trenching machine than it does to do the work by hand, and the power trencher saves time and labor and offers the farmer assurance that the work will be done. This is the opinion of the drainage engineers of the Bureau of Public Roads, United States Department of Agriculture, who have studied all angles of this important part of farm work.

A farmer rarely owns enough acreage to pay him to buy a machine strictly for his own use. Sometimes he is able to hire a contractor who owns a trencher, but the cheapest and most efficient means of employing the machine seems to be through the medium of cooperative ownership and administration. A number of farmers unite to buy the machine, engage a permanent operator, and fix the rates to each member. They are ready for work.

A strong objection raised against the cooperative ownership of farm machinery is in the trouble that is often experienced in assessing breakage and repair charges. Smith doesn't want to pay for a new cutter to replace the one that Brown broke. Brown doesn't feel like it either, and says that Simpson wore the cutter to the breaking point before he, Brown, took the machine.

A group of New York farmers overcame this difficulty by organizing themselves as a ditching company equipped with regularly elected officers who execute ditching contracts between the company and its individual members. The prices are based upon the cost of digging each linear rod of trench and to this cost is added a small additional sum to cover repairs. The prices are nominal. Rougly speaking, a 4-inch tile system costs about $75 per acre drained, which figures out at about 8 cents per linear rod of drain where laterals are spaced 50 or 60 feet apart.

How New York Uses Machines.

Another plan employed in New York State has to do with 15 trenching machines purchased by the State. These are placed with the county farm bureaus and the bureaus execute contracts with the farmers at prices which are fixed each year. The bureau contracts with the State to cut 5,000 rods of tile ditch each year and to pay the State a rental of 10 cents a rod. They also put the machine in good repair at the end of the season. The scale of prices for 1919 was based on a ditch 15 inches in width:

Depth.	Per rod.
2 feet 6 inches or less	$0.55
2 feet 6 inches to 3 feet	.65
3 feet to 3 feet 6 inches	.80
3 feet 6 inches to 4 feet	1.00
4 feet to 4 feet 6 inches	1.25
4 feet 6 inches to 5 feet	1.50

There are two essentials to be provided for in the operation of a power trenching machine. The first consideration is to purchase a machine of sufficient power—horse-operated machines seldom fall in the class—and, second, the choice of an operator who will stay with the trencher.

The operator may be already trained or, if he has had some tractor experience, he will learn how to operate the ditcher readily enough. His services are important to cheap operation, as he will, by practice, learn how to keep down breakage costs and to save time in getting the trencher from place to place.

Tile drainage pays; power trenching pays, particularly if it is handled cooperatively.

Additional facts and figures may be secured by asking the United States Department of Agriculture for the pamphlet on "Community Tile Drainage Construction."

TEACHING PUBLIC ECONOMY IN CONSERVING NATURAL GAS

A campaign to combat the present extravagant use of natural gas has been organized this year by the Bureau of Mines in conjunction with the United States Department of Agriculture and the gas companies in Pennsylvania and Ohio. It has been found that the largest wasters of gas are the domestic consumers and the farmers who own the natural-gas land. The domestic consumer is accountable for 85 per cent of the waste. Old-fashioned stoves of the coal-range type and coal furnaces in which gas is burned are the biggest offenders, consuming as they do much greater quantities of gas than is necessary. On the farms in the natural-gas regions, when a light is needed in the yard, field, or elsewhere out of doors, a pipe is tapped, lighted, and burns day and night for perhaps years. The farmers who own natural-gas lands do not have to pay for the gas used.

With Pittsburgh as a center, a campaign is now on to educate the consumers to save gas. A scientific assistant from the Office of Home Economics of the United States Department of Agriculture is in charge of the work among the housewives. She gives demonstrations at which the women learn how to change an old-fashioned range so it will consume much less gas, why a regular gas furnace should be used if the house is to be heated by gas, and various small ways to economize in the amount used. The children in the schools are doing good work in this campaign, carrying home the message and reporting on the progress in gas economy which is being made in their homes.

Natural gas is a great convenience in those regions where it is found, but the supply is not unlimited and in some sections, notably in Pennsylvania and Ohio, it is now giving out. In fact, much of the gas now being used there is being piped from West Virginia. The present want is due in large part to the past waste. Specialists of the Bureau of Mines, who are conversant with the situation, say that unless conservation is practiced in Pennsylvania and Ohio, the fields there will be exhausted in three or four years, but that with proper economy they will yield sufficient gas to light and heat for 25 years the sections that are now using gas.

Corn Meal Can Be Cooked in Many Ways—Each Locality Has Method of Its Own

Crisp hot corn bread with plenty of butter and a pitcher of buttermilk! Who could ask for anything better? Centuries of use have not affected the liking of the human race for dishes made of Indian or corn meal, nor lessened the amount eaten. Investigations made by the United States Department of Agriculture show that more than 60 per cent of the food consumed by the people of the United States is of vegetable origin and of this about one-seventh is corn meal. Each locality where corn is used in large amounts seems to have worked out its own peculiar dishes.

The southern cook made hoecake, or corn pone, or ash cake, by cooking a dough of corn meal and water on a board before an open fire, or by baking it in the ashes. Sometimes a little fat was added. The early New Englander made similar cakes, which, when baked before the fire, were sometimes basted with cream to make them richer. The New Englander also made "hasty pudding" by cooking corn meal in a large quantity of water—a staple article of diet. This was so made that when hot it was thin enough to be eaten as a mush with milk, and when cold thick enough to be fried in slices. The Italian has his polenta, which resembles hasty pudding, except that it is usually somewhat thicker and that a little fat or cheese is added, and in the eastern Mediterranean regions many corn meal dishes are very important foods. The American Indian makes a corn bread which usually is seasoned highly.

Combine It With Protein Foods.

Besides these simple dishes, various peoples have worked out combinations of corn meal with foods differing from it widely in composition. Corn meal contains protein, fat, and starch, but the protein is lower than it should be in the diet as a whole and a trifle lower than it is in wheat. Instinctively, therefore, people seem to combine corn meal with foods in which the protein is more prominent. This is shown by the fact that almost every locality which uses corn meal in large amounts has a characteristic dish in which it is used with beans, meat, or other foods richer in protein. Probably the best known dishes of this kind in the United States are succotash—learned from the Indians and in early times made of dry corn and beans as well as of green—the mush and milk of the earlier settlers of New England and the hoe cake and buttermilk of the South.

Another apparently instinctive attempt to combine with corn meal the lacking nutrients is the dish known as "scrapple." This is made by cooking corn meal in the water in which pork—usually a pig's head—has been boiled, and combining this mixture with the finely chopped pork. The addition of the meat, which consists largely of protein and fat, to the corn meal, of which starch is a prominent ingredient, tends to produce a complete ration. "Stamp and go," a favorite dish among the natives of Jamaica, is made up of salt fish, lard, and corn meal, and has a nutritive value like that of scrapple. The use of cheese, which consists chiefly of protein and fat, with polenta may be considered an instinctive attempt by the Italians to satisfy the physiological food requirement by means of a single dish.

Most of the dishes mentioned above had their origin in times when life was much simpler than it is at present and when fewer dishes were served at a meal. In most American homes of the present meals consist not of one but of several dishes, and there is a considerable variety of food materials used in the course of a day or a week. When the protein foods and the fruits and vegetables are represented sufficiently in other dishes, there is, of course, no necessity for providing these in the same dish with the corn meal. Corn meal, therefore, now is used chiefly as a breakfast cereal or in the form of bread.

An important feature of a well-planned diet is attractive flavor. This has a real physiological importance because appetizing food stimulates digestion. Combining staple foods with different savory materials prevents the diet from becoming monotonous, and adding materials of distinctive flavor to mild-flavored ones makes larger quantities of the latter acceptable. These facts have been instinctively recognized wherever corn meal has been used in large quantities. The Zuni Indians have a dish which is called "hot cakes." They make it by combining corn meal with water and suet and adding a large amount of red pepper. In the United States it was a custom in olden times to vary many of the corn-meal dishes by the addition of tart apples, and in Italy polenta usually is served either with a highly-seasoned sauce or with cheese. When it is necessary to use corn meal very freely, the desirability of varying its flavor and texture should be kept in mind. Fried corn-meal mush, for example, offering as it does the flavor of boiled meal and also of parched meal, and being crisp on the outside and soft within, has a different taste from the mush itself, and so provides variety.

Making Mush That Won't Lump.

Recipes for the use of corn meal that will be useful everywhere are not easy to make, for the meal used in various parts of the country differs considerably. In general the granular, which is used more commonly in the North, requires more water and longer cooking than the water-ground, which is used more generally in the South. This extra cooking is needed to soften the meal and remove the granular quality from which it gets its name, and must often be given to the meal before it is used in making bread, or such dishes as waffles or doughnuts.

In order to produce a satisfactory flavor it seems necessary that the mush should at some time reach the boiling point. The most common way of preparing mush is to allow the water to come to the boiling point and to add the meal slowly, stirring constantly. The objection to this method is that there is considerable danger that the mush will become lumpy and oftentimes it is inconvenient and unpleasant to stand over a hot stove and stir the mixture sufficiently to make it smooth. A better method and one recommended by the United States Department of Agriculture is the following:

Put the corn meal, cold water, and salt together in the top of a double boiler. No stirring is necessary. Put the top of the double boiler into the lower part and allow the mush to heat slowly, cooking half an hour, or longer, if convenient. Many people cook it as long as four hours. Just before serving remove the top of the double boiler from the lower part and boil the mush for two or three minutes. In boiling it at this time there is no danger that it will lump.

Skunks yielded $1,000,000 worth of hides to New York State farmers and trappers in one year. The United States Department of Agriculture, in a new circular on the fur industry, gives suggestions for making this supposed pest into a profitable friend of the farmer.

In 1920, 6,000 acres of flax were cultivated in the United States, as against 5,000 acres in 1919, the United States Department of Agriculture estimates. Wisconsin, Minnesota, Michigan, and the Willamette Valley of Oregon lead in production. The 1920 crop is valued at $1,600,000.

Shows Superiority of European Seed Flax—Advice for Growers in Semiarid Regions

The superiority of European seed-flax varieties over others for the semiarid sections of the North Central States has been proved by experiments recently completed by specialists of the Bureau of Plant Industry of the United States Department of Agriculture, the results of which are contained in Department Bulletin 883, now available for distribution. The true seed-flax types rather than the short-fiber ones are said to be the most productive.

A Word of Caution.

Nursery experiments indicate that favorable results can not be expected from new importations in comparison with acclimated seed, particularly if selected domestic strains can be procured. Russian and northern European strains that have undergone natural or scientific selection toward a high seed-producing type are those best adapted for semiarid conditions in the northern Great Plains. Commercial growers, it is said, should not risk large acreages with Argentine seed; and the growing of Indian, Abyssinian, or south European seed in this area can only result in total failure.

If the preparation of the land has been thorough and a good seed bed obtained, 20 pounds of flax to the acre is a sufficiently heavy rate of seeding. Heavier seeding may be preferable under certain conditions, such as a seed bed so dry that germination is uncertain. According to the bulletin, however, the results do not indicate much advantage in heavier seeding; and the high price of seed flax discourages the practice.

Early seeding is recommended, and the ground should not be left to dry out after the seed bed is prepared. It is desirable to follow the plow, disk, harrow, or packer immediately with the drill if the ground is broken in the spring. Land backset the previous fall should be disked before seeding, in order to kill weed growth and improve the seed bed. Best results can be expected from seedings made from May 1 to June 10. A rapid decrease in yield from sowings made after June 10 can be expected.

Persons interested in a full account of the experiments may obtain copies of the bulletin upon request from the United States Department of Agriculture, Washington, D. C.

"OWN YOUR OWN ROOM" NEW PROJECT OF GIRLS' CLUBS

"Own Your Own Room" is the newest project in the boys' and girls' clubs. Connecticut and Iowa have many clubs of this new type and other States are fast taking up the idea.

The members in an "Own Your Own Room" club plan to buy or make over their own room themselves. The club leaders say that a girl needs a nucleus around which to build a larger life or she will not be content with her surroundings. The "Own-Your Own Room" idea seems to offer this nucleus. Incidentally after a girl has finished with her own room she is apt to have a larger interest in the whole house.

This new club project is not one to encourage the making of dressing tables from soap boxes or wing chairs from barrels. The club leaders assume that the girl on the farm to-day either has furniture which a little work will turn into a "joy forever" or is able to buy new pieces. Especially is this true of the club girls who have made and banked money through their other club projects. A knowledge of sewing, sanitation, and household decoration will be necessary, or the result will not be entirely satisfactory to the owner or her club leader.

Directions are given the girls in the "Own Your Own Room" clubs on the refinishing of furniture, redecorating of walls, and the making of sanitary, artistic, and simple draperies, as well as instruction on what constitutes good lines in furniture, what kind of a rug to buy or make, and what is satisfactory and unsatisfactory in wall coverings.

Waging War on Lady Killers—Aims to Lighten Housework

An exhibit of "lady killers," the kind found in too many homes, is being put on in different parts of the State of Washington by the Washington State College extension department and the United States Department of Agriculture. The attendance wherever the exhibit has been held has been in the hundreds, both men and women finding much of interest.

Among the "lady killers" are found the washboard, the sad iron, the scrub brush, the water pail, the short-handled dustpan, the ax, and a number of implements with which many women are obliged to do their work.

To offset the "lady killers" was another exhibit of ways and means of lightening work in the home. In this were included "kitchen jitneys"—a type of tea wagon—iceless refrigerators, washing machines, plans for simple water systems, fireless cookers, fruit and vegetable driers, oil stoves, portable gas makers, and hydraulic rams. Several manufacturers showed light and power plants suitable for farm homes at the same exhibit. Small conveniences costing anywhere from 5 to 25 cents were also displayed. Getting more conveniences for doing work into the home is the aim of every home-demonstration agent. Last year, through their advice and by their aid, thousands of labor-saving devices and conveniences were installed in country homes, thereby lessening the housewife's work and increasing her efficiency, comfort, and enjoyment of life.

BOYS' AND GIRLS' CLUBS SHOW STEADY GROWTH DURING 1920

During the first six months in 1920, 208,257 boys and girls in the Northern and Western States enrolled in the clubs which are supervised by the United States Department of Agriculture and the State colleges. The large enrollment in these clubs promises that soon, possibly before the next census is taken, the exodus from the country to the city will be definitely checked. Club work has already dignified agriculture in the eyes of thousands upon thousands of farm boys and girls, and made them satisfied with country life, for the organization brings new interests into the lives of its member and enables them to make money of their own. While club work encourages boys and girls to procure a higher education if possible—987 northern and western club boys and 607 club girls are in agricultural colleges this year—it does not educate them away from the farm.

One per cent of the total population of the country, or 1,041,441 persons, were reached the first six months of the current year through the juvenile club events. When the boys and girls put on an exhibit it is popular with all ages and all ages attend. The work in the clubs was carried on by 173 permanent county club agents and 8,046 volunteer local leaders. The number of permanent club agents has nearly doubled in six months. Large numbers of farm bureaus now are paying the salary of a club leader as well as that of a county agent and home demonstration agent.

Forest Service Dry Kiln Boon to Industries—Saves Time and Cost in Seasoning Wood

An invention which already is being utilized to great advantage by wood-using industries is the Forest Service water-spray dry kiln, which enabled the United States to save years of time and thousands of dollars in seasoning stock for airplanes, artillery and escort vehicle wheels, and many other forms of lumber needed in a hurry to win the war. It is a kiln which can be so regulated as to reduce the loss in seasoning to a minimum—in many cases even to less than that which occurs in air seasoning. Stock that requires six months to air season has been dried in less than one month in this kiln, and has come out in better condition than if it had been air-seasoned.

Gives Details of Work.

That the benefits of this improvement, developed by the Forest Service, United States Department of Agriculture, may be more generally available for the public a department bulletin has just been published entitled "Manual of Design and Installation of Forest Service Water-Spray Dry Kiln." It gives detailed instructions for the proper construction and installation of this kiln, and contains, incidentally, much valuable information on dry-kiln construction and operation in general.

With the recent difficulties in getting sufficient timber to meet their needs, many industries have had to consider the addition of dry kilns to their plants. The hardwood-producing industry used commonly to hold its stocks for several months or a year for seasoning. Consuming industries commonly carried in stock supplies sufficient to meet one or even two years' needs. When material was needed it was already seasoned. But lately a great increase in artificial drying has become necessary. And it is not only the necessity for getting lumber quickly that makes the Forest Service kiln especially valuable now; it actually saves money by reducing the loss of lumber by preventing warping, case hardening, and other seasoning defects.

This publication is designed particularly for the trade, and is not popular in character. Persons interested in securing copies should address the United States Department of Agriculture, Washington, D. C.

FEW FARMERS MAKING LARGE PROFITS IN AREAS STUDIED

(*Continued from page 1.*)

From the figures thus obtained the farm income (receipts less expenses) and the labor income (farm income less 5 per cent on investment) have been computed for each farm and for each group of farms.

The average farm income of the 25 farmers visited in Washington County, Ohio, for the seven years 1912–1918, was $610; the labor income, $276; the return on investment, 4.6 per cent. In addition to the farm income, the farmers had food, fuel, and house rent, estimated to be worth, on the average, $359 per year. For 1912 the farm income of these farms averaged $456, and for 1918 the average was $719. These farms are in a hilly section, where the soil is not especially fertile.

Make Better Showing.

The 100 farmers in Clinton County, Ind., being on better land than the Ohio farmers, made a correspondingly better showing. Their farm incomes averaged $1,856 for the seven years, 1910 and 1913–1918, and their labor incomes, $558. Return on capital was 5.7, and food, fuel, and house rent furnished by the farm, $425. The average farm income of these farms increased from $1,282 in 1910 to $2,978 in 1918.

The farm income of the 60 Wisconsin farms averaged $1,293 for the five years, 1913–1918, the labor income, $408, and return on investment—determined by deducting from the farm income the value of the farmer's labor—4.7 per cent. The average farm income ranged from $1,079 in 1913 to $1,990 in 1918. On most of these farms the principal source of income is dairying.

Of the 185 farmers in the three areas, none made a labor income of $1,000 for every year of the study, but 18 in the Indiana area and 7 in the Wisconsin area made labor incomes averaging over $1,000 per year for the period. Four farmers (2 per cent of the entire number) made over $500 labor income every year. Averaging labor income and loss over the whole time, 15 per cent of the farmers failed to make any labor income at all. Ten per cent failed even to make 5 per cent interest on investment in any year of the study.

Department specialists point out that though farm incomes in most cases showed a marked increase during the years 1916–1918, as compared with incomes for 1912–1915, these increases are more apparent than real, in view of the decrease in the purchasing power of the dollar. The turnover for the recent years was larger than for the earlier years, but the returns were relatively little larger, if measured in terms of the things it would buy rather than in terms of dollars and cents.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended October 9, 1920:

The Crow In Its Relation to Agriculture. Farmers' Bulletin 1102.

Care of Baby Chicks. Farmers' Bulletin 1108.

Poultry Houses. Farmers' Bulletin 1113.

Factors that Make for Success in Farming in the South. Farmers' Bulletin 1121.

Citrus-Fruit Growing in the Gulf States. Farmers' Bulletin 1122.

Cooperative Marketing. Farmers' Bulletin 1144.

Control of the Root, Stalk, and Ear Rot Diseases of Corn. Farmers' Bulletin 1176.

Status and Results—County Agent Work—Northwestern States, 1919. Department Circular 106.

The Government Exhibit at the 1920 National Dairy Show. Department Circular 139.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 1102; Department Bulletin No. 842; Department Circular 106.

FARMERS GETTING MORE FOR EGGS.

Egg prices received by farmers began to ascend in 1916 by 2.4 cents per dozen over 1915, in the average for the year, but the greatest advance in one year since 1915 was in 1917, when it was 9.7 cents per dozen above 1916. The advance of 1918 was 4.2 cents and of 1919 a fraction of a cent more, or 4.3 cents. The highest monthly price reached in the records of the Bureau of Crop Estimates beginning with 1910 was for January, 1920, when it was 64.8 cents per dozen, to which it had risen from 30.5 cents for January, 1910.

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ADVISES FARMERS TO PLAN NOW FOR HANDLING SOFT-CORN CROP

More or Less Corn Caught By Frost Practically Every Year.

Large Acreage of Corn Was Planted Very Late This Spring—Very Late Fall Needed to Insure Maturity—Discusses Ways for Handling Soft Corn.

More or less corn is caught by frost every year before it is fully mature, and this year a large acreage of corn was planted very late in the spring. This necessitates a very late fall to insure the maturity of the corn.

It would seem that corn raisers, especially those having late corn, should begin to think about the handling of a soft-corn crop. Plans should be made as to just how you will utilize the crop should you have the misfortune of having your corn, or a part of it, damaged by an early frost.

Sound, high-grade grain can not be made from soft, immature corn. The only way to produce first-class grain is by planting seed of a well-adapted variety that will mature in an average season, with a margin of safety for the off year. Even with such varieties, soft corn will be produced when a late spring and early fall occur in the same season.

There are four ways of handling soft corn to reduce loss. It may be fed direct to live stock, put in the silo, dried artificially, or salted when cribbed. The best method will depend upon the maturity of the corn, the quantity to be handled, the live stock available for feeding, and the facilities for drying and storing.

Feeding.

Soft corn, so long as its soundness is unimpaired, can be fed safely to all kinds of stock. Horses and sheep, especially lambs, are susceptible to injury from moldy corn and it should not be fed to these animals. Cattle seemingly are immune to this danger, and soft corn can be fed to hogs safely and profitably as long as they will eat it. The feeding of soft corn is limited, therefore, by the number of cattle and hogs available for prompt feeding. In seasons such as 1917, when there is a large amount of soft corn, the demand for feeders is so great that prices may become excessive and make feeding a highly speculative business. Prompt feeding is unquestionably the best disposition to make of soft corn, so far as this is possible.

Hogging-Down Soft Corn.

Hogging-down soft corn is a safe and satisfactory practice. When soft corn is to be fed in this manner, or in any other way, the hogs must be accustomed to it very gradually. One ear a day should be fed at first and the amount increased gradually to a full feed, when the hogs may be turned into the field of soft corn and allowed to harvest it. It is advisable to allow the hogs access at the same time to a self-feeder containing tankage, which should be placed in the cornfield.

Cutting and Shocking Fodder.

The shock is a very good way by which a great deal of a soft-corn crop can be saved. If you have a silo, fill it first, then cut up and shock as much as possible. Soft corn dries out much better in a shock than when left on the stalk standing in a field. A little later on, in case the corn was spoiling in the shock and you were not in a position to feed it before spoiling, it might be possible to

(Continued on page 6.)

DENTS MEAN SHORT MEASURE.

Many farmers who ship milk for market still insist on measuring their product by a stick shoved into the can from the top, and regard this measure as infallible regardless of dents or other irregularities in the can. The United States Department of Agriculture recently tested 1,102 cans of milk by can measure and then weighed the contents. The measuring stick said 6,185 gallons and the scales only 6,068 gallons, a difference of 1.88 per cent. This difference was due primarily, it is thought, to the poor cans used.

CAUTIONS FARMERS ON POINTS TO WATCH IN MAKING LEASES

Clear, Equitable Lease of Prime Importance to Tenant and Landlord.

Many Times Both Parties Are Content to Use Some Easily Available Printed Form—May or May Not Be Best Suited to the Conditions—Lease Should Fit Case.

A clear and equitable lease contract is of prime importance to both tenant and landlord, yet because of the difficulties involved in drawing up such a contract to fit a given case, tenants and landlords alike often are content to use some easily available printed form, that may or may not be best suited to the conditions. In Farmer's Bulletin 1164, The Farm Lease Contract, the United States Department of Agriculture urges farmers to make sure that their leases say just what they ought to say, and mean just what they were intended to mean.

Lease Should Fit Case.

It is pointed out that custom often tends to perpetuate a long-established type of agreement, even though conditions do not continue to justify the terms involved. For example, the stock-share lease, almost universally framed on the 50-50 basis, with the landlord furnishing the land and the tenant furnishing the labor, work stock, and equipment, is not necessarily equitable. Land and labor vary in relative value, and what might be an equitable ratio upon which to base division of returns in one case might be altogether unsatisfactory in another. It is urged that an adjustment should be made in each individual case, taking into account the relative value of the elements contributed by the contracting parties. The following-described method is suggested for making such an adjustment.

"First an estimate should be made of the fair value of the use of the land and of the value of ordinary farm labor, with additional estimates of the cost of horse labor and the annual cost of the use of

equipment. The value of each of these items may be determined with a fair degree of accuracy in advance. The ratio of the two values should be determined, and all other expenses and receipts should be divided in the same proportion. Suppose, for instance, that the fair value of the use of the land for a year is found to be $500, while the fair value of the farm labor, horse labor, and use of equipment is $1,000. The ratio of these quantities is 1 to 2. The landlord should then pay one-third of all other expenses and the tenant two-thirds. After these other expenses have been deducted from the total receipts the landlord should receive one-third of the remainder, and the tenant two-thirds."

Thus the receipts will be divided in exact proportion to the value of the contribution of the parties in fulfilling the contract.

"Stop, Look, and Listen."

In the following series of questions, designed to serve as a sort of "stop, look, and listen" warning to farmers who have to do with lease contracts, the authors of the bulletin summarize the main points to be taken into account in drawing up a farm lease.

"Is it so written that its meaning will be clear at any later time?

"Is it fair to both parties?

"Does it give the tenant a reasonable opportunity to make a comfortable living and to get ahead?

"Does it require proper and conservative care of the premises leased?

"Are all desired reservations to the lease made?

"Are the things stated which each party is to do and to contribute?

"Does it make clear the rights and privileges of each party?

"Does it define the relationship between landlord and tenant and provide for the settlement of differences of opinion?

"Does it contain a statement of the procedure to be followed when the relationship of landlord and tenant is to be terminated?

"Does it contain the following essentials to a legally complete lease?

"1. The date it was made.

"2. The names and the final signatures of the contracting parties.

"3. The period for which the lease is to run.

"4. A description of the property leased.

"5. An agreement in respect to the amount of rent to be paid and the time when and the place where it is to be paid."

Department Making Farm-to-Farm Survey To Complete Fight Against the Barberry

In the work of the United States Department of Agriculture for the eradication of the common barberry as a defensive measure against wheat rust, the survey of the principal cities and towns has been practically finished. A farm-to-farm survey, however, is really just begun in portions of the 13 States included in this campaign to locate the thousands of cultivated and escaped bushes on farms. A resurvey of cities and towns also is being made to guard against sprouting and to find isolated bushes which have been overlooked.

Farm-to-Farm Canvass Made.

Preliminary inspections showed that it would be necessary to survey every farm in this territory east of the one hundredth meridian. This survey was started in some States in 1919 and in the others in 1920. Eleven counties on the eastern border of North Dakota, seven on the eastern border of South Dakota, and 13 counties in southeastern Minnesota have been surveyed, and some work done in five others.

Fourteen counties in northeastern Iowa and the equivalent of 15 in Nebraska have been covered by the rural survey. Six counties near the border of Illinois and Wisconsin have been covered, and in them cultivated barberries on farms and widely scattered escaped bushes have been found more abundantly than in most States. Nineteen counties in Indiana, six in Ohio, and three very large counties in southern Michigan have been cleared.

The results of the survey show that there were cultivated barberries on one or more farms in every county. In some counties there were hundreds of farms with cultivated and many with escaped bushes. The number of mature fruiting bushes and the hundreds of scattered seedlings indicate that within a few more years many of these counties would have had still more severe rust injury to wheat. Numerous cases of the direct spread of stem rust directly from barberries to grain were mapped and used as demonstrations to farmers.

Will Survey Irrigated Areas.

In Colorado, Wyoming, and Montana, more recently and more thinly settled, barberries were less numerous. The survey of the principal areas of Colorado supposed to have barberries has been completed, except an irrigated district south and east of Platteville and the river valley from Fort Morgan to the Nebraska line. All necessary surveys and one resurvey for sprouts have been made in Montana. All cities and towns of eastern Wyoming have been inspected and plans are on foot for a rural survey of irrigated areas there.

FIGHTING THE BOLL WEEVIL SHOWN BY MOTION PICTURES

Help for southern cotton growers in the fight against the boll weevil is being prepared by the United States Department of Agriculture in the form of a motion picture, showing the methods used in controlling the weevil by means of calcium arsenate poisons applied by dusting machines. The views, which will not be available for use until the first part of January, will show the apparatus used, which covers a large area in a day, and the detailed parts and methods of operation, together with fields of cotton and individual cotton plants, bolls, and ginned cotton where the poison has been applied and where it has not. By the persistent and intelligent use of this insecticide department specialists hope to keep the loss by boll weevils down to 10 per cent. Unchecked, it has run as high as 50 per cent in some fields.

TREND OF FARM PRICES.

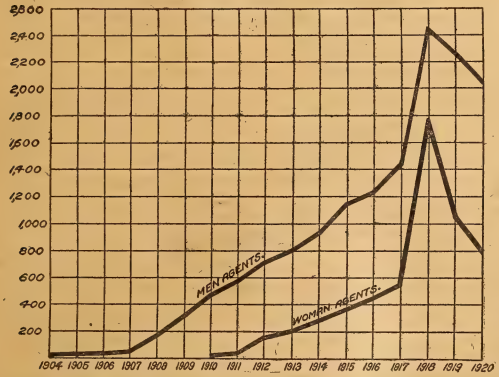
The level of prices paid producers of the United States for the principal crops decreased about 10.6 per cent during August; in the past 10 years the price level decreased about 1.2 per cent during August. On September 1 the index figure of prices was about 7.2 per cent lower than a year ago, 0.5 per cent higher than two years ago, and 56.9 per cent higher than the average of the past 10 years on September 1.

The prices of meat animals—hogs, cattle, sheep, and chickens—to producers of the United States decreased 2.3 per cent from July 15 to August 15; in the past 10 years prices increased in like period 1.4 per cent. On August 15 the index figure of prices for these meat animals was about 22.1 per cent lower than a year ago, 14.8 per cent lower than two years ago, and 34.1 per cent higher than the average of the past 10 years on August 15.

PROGRESS IN EXTENSION WORK

Altogether, there are 2,936 counties in the United States. It is estimated that 2,850 have or may develop sufficient agriculture to require the services of an agent. However, it is believed that it will be a long time before more than 2,650 counties will have agents, largely because of the inability to obtain the necessary funds locally to cooperate with the State agricultural colleges and the United States Department of Agriculture. When the Smith-Lever Act went into effect 930 counties had the services of a county agricultural agent. At the present time over 2,000 counties have such services. When the Smith-Lever Act reaches its maximum in 1923 it would seem from present tendencies that 2,650 counties will have the services of a man agent. During the time the Smith-Lever Act has been in effect the number of counties with home demonstration agents has increased from 280 to nearly 800. The emergency funds provided during the war were a great stimulus to extension work. Between July, 1917, and July, 1918, the number of counties with men agents increased from 1,435 to 2,435, and those with women agents increased from 537 to 1,715. However, at the present time the number of counties with agents is about the same as would have come about if the growth prior to the war had continued during the war period.

SIXTEEN YEARS' DEVELOPMENT IN COUNTY-AGENT WORK.



Corn is never stationary in quality. It either improves or retrogrades, says a United States Department of Agriculture specialist. There is no more excuse for farmers raising scrub corn than scrub cattle.

Forest lookouts lead lonesome lives, but not devoid of excitement. At Mount Eddy in the Shasta region of California, recently, the United States Department of Agriculture Forest Service is advised, lightning struck the lookout station, tore a 4-foot hole in the wall and stunned the lookout, J. S. McClemmens. He recovered just in time to save the house and his own life. Thirty-five lightning fires were caused in that vicinity the same day.

CRUSADE AGAINST MOLES NETS FARMERS PROFIT FROM SKINS

Moleskins obtained from animals killed in the crusade fostered by the Biological Survey, United States Department of Agriculture, against crop-destroying animals have netted $50,000 to $60,000 a year to farmers of Oregon and Washington. Moles and the many kinds of rodents do serious damage to grass and grain, and a campaign of extermination was started against them through cooperation of the Biological Survey and the States Relations Service. As a by-product of extermination the fur of the mole was found to be of value. The pelt of the northwestern mole is superior to that of the Scotch mole, which is generally used for fur garments. The northwestern moleskins have recently sold at from 50 to 60 cents apiece and have been in great demand.

The total annual damage by rodents to crops and grains in the United States is estimated roughly at $300,000,000. This is being cut down by systematic poisoning campaigns in various sections. The territory covered in these campaigns in the last year amounted to about 34,000,000 acres. The saving to crops in the destruction of moles and of such rodents as prairie dogs, ground squirrels, pocket gophers, and jack rabbits is estimated to be $10,000,000 a year.

FIGHT INSECTS NOW WITH PLOW.

Fall plowing is the most universally effective way of controlling the insect pests that annually cause great losses to the grain farmer. It is much easier and cheaper, says the Bureau of Entomology, United States Department of Agriculture, to prevent an insect outbreak in this manner than it is to stamp out the infestation once it is fully developed. The Hessian fly, so destructive to wheat, is one of the insects that can hardly be eradicated once it is established in the crop. Fall plowing is recommended because it breaks up the soil and destroys the grubs and pupæ of many insects by exposing them to the sun and air.

Farmers' Bulletin 835, prepared by the Bureau of Entomology, tells how to control the most common and dangerous of the grain farmer's insect enemies. It gives briefly the life histories of the Hessian fly, army worm, cutworms, grasshoppers, white grubs, billbugs, corn-root aphis, and wireworms, with authoritative data describing the characteristics of each pest and the best practical remedies for control. The bureau advises the grain farmer to plow in the fall, if possible; to keep a supply of insecticides and a spraying outfit on hand; to watch the crops carefully for an outbreak, and to report all outbreaks to the county farm adviser, or direct to the Bureau of Entomology, United States Department of Agriculture.

In eradicating the cocklebur, remember that it carries a double-barreled gun. Every bur carries two seeds, only one of which sprouts the first year. Even when the product of that seed has been killed the other will be in shape to make trouble the next season. The United States Department of Agriculture has a circular on the cocklebur—how to get rid of it.

Weekly News Letter

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T. W. NORCROSS BECOMES CHIEF ENGINEER OF FOREST SERVICE

The appointment of T. W. Norcross as chief engineer of the Forest Service, effective October 10, is announced by Col. W. B. Greeley, head of the Forest Service. Mr. Norcross succeeds Mr. O. C. Merrill, who resigned a short time ago to become executive secretary of the Federal Power Commission.

Mr. Norcross is a native of Medford, Mass., and a graduate of Tufts College, from which institution he received in 1904 the degree of bachelor of science. After his graduation from college he had several years of general engineering experience, particularly in hydraulics and construction work. He was also employed by the Geological Survey on hydrographic work, and in October, 1910, entered the Forest Service as district engineer of the Rocky Mountain and southwestern districts, with headquarters at Denver, by transfer from the Geological Survey. While district engineer, Mr. Norcross was in charge of the water-power and irrigation studies made by the Forest Service, as well as other general engineering work in the two Forest Service districts. In June, 1913, he was transferred to the Washington office to take the position of assistant chief engineer, and since 1916 has devoted his attention almost entirely to the supervision of National Forest roads constructed with the appropriations made under the 10 per cent fund, Federal aid road act, and the Post Office appropriation act of 1919. Mr. Norcross is an associate member of the American Society of Civil Engineers and a member of the Washington Society of Engineers.

GET THAT WOLF—TERSE ORDER AGAINST $25,000 MARAUDER

"Get that wolf," is the sole order under which H. P. Williams, of Custer, one of the most experienced hunters in South Dakota, is working for the Biological Survey of the United States Department of Agriculture.

"That wolf" is a wicked veteran with the cunning of a criminal human and with an account of $25,000 charged against him for cattle and sheep destroyed in the six or seven years of his depredations.

This big cattle thief has defied all efforts of the local hunters. One of the tactics credited to him is that after making a kill of a fat calf or steer and eating his fill he makes a long trail from his kill and back tracks on a parallel line a few rods away. He then lies in wait at a point convenient to the sheltering timber.

When the hunters trail him with dogs he watches them from his cover safely to leeward to avoid his scent being carried. As the pack passes on the scent he quietly slips into the woodland and makes his getaway.

Stock raisers had about decided that it would be necessary to board the old "varmint" for the rest of his natural life, or until he died from overeating; but the Biological Survey is determined not to be defeated by a wolf, and Williams promises to bring in the marauder before another season is ended.

ANNUALLY DAMAGE MILLIONS OF DOLLARS IN SHADE TREES

Ten million dollars damage annually is done to the shade trees and hardy shrubs of the country by shade tree insects, according to estimates made by the Bureau of Entomology, United States Department of Agriculture.

It is very difficult to estimate the money value of the shade trees and shrubs of the country, but a very conservative estimate would place their value at $1,000,000,000. These figures were reached after extensive correspondence with the forestry and other authorities of States and municipalities. A more definite census is aimed at, but the figures are taken as dependable for general purposes. They are based on the value of trees to cities, parks, and private property, and have no reference to the bare intrinsic value for wood or lumber. An old oak tree which, because of its condition is not worth $2 for lumber, may add $500 to the value of the city lot on which it is located.

The shade trees and ornamental plantings of parks and streets, grounds of health and pleasure resorts, public institutions, and of city, suburban, country, and farm homes, represent a form of wealth which the people realize in health, recreation, enjoyment of the home, and the increased value of property.

There is a constantly increasing demand for information on insects injurious to these growths, and the Department of Agriculture is eager to be of assistance in reducing losses.

POISON SIRUPS EFFECTIVE AGAINST THE ARGENTINE ANT

Noah built an ark for himself and his family when the floods came, and the Argentine ants do something quite as effective and a great deal more unique when a flood menaces their home. They cluster together and form a compact ball, which floats along the top of the water until it comes in contact with a secure resting place. That found, the cooperative spirit disappears, and each again becomes an individual looking out for "number one" first and always. In forming a ball the ants in immature stages cluster in the center of the mass, while the queens and workers form the outer portion. As the ball enlarges by the addition of other workers that have been struggling alone in the water, it gradually revolves. During its voyage on the water it keeps revolving slowly by the outside workers striving continually to reach the top of the ball. This permits air to reach the interior.

The ball method of traveling is only one of the many ways by which the Argentine ant gains new territory. From Texas to the Atlantic, throughout the South, this pest has now established itself, to the injury of the nurseryman, the trucker, and the orange grower.

Farmers' Bulletin 1101, recently issued by the United States Department of Agriculture, gives methods of controlling the Argentine ant found to be effective. Where the infestation has reached proportions of any size, municipal control measures are recommended. The best and most effective of these is the use of tin-can containers for ant-poison sirups. As the ants prefer to climb for their food, these cans are hung near ant trails going up trees and walls. The sirup attracts and at the same time destroys the pest.

THE WHEAT MAN'S BURDEN

"The white man has been referred to in speech and in verse as having one of the heavy burdens of life to bear. This burden, real or fancied, may be heavy, but, to the minds of the grain growers of the world, it in no way compares with the accumulated burdens borne by the farmer in the production of the wheat crop upon which the world depends for its staff of life," says Dr. F. E. Kempton, in charge of the barberry-eradication work of the United States Department of Agriculture.

"If the crop escapes bad weather—cold, ice, flood, hail, frost, drought, or hot winds—various insects may be lurking about to feed upon what remains. Plant diseases in the form of smuts, rusts, and scabs have taken varying toll during past years, but, as a rule, they have been less fully understood than the troubles from weather or insects. Among these diseases are the loose smut, stinking smut or bunt, the black stem rust, the leaf rust, and the scab or blight. Of all these the black stem rust has taken the heaviest toll in the Northern States, from year to year, and in years of rust epidemics it has caused appalling losses. Hope is now held out to the wheat growers of the northern part of the United States that the control of black stem rust is possible by the eradication of common barberry.

"It is important that everyone should understand that the harmful barberry is the tall green common European barberry and its purple variety, and may be distinguished by the following characters: Usually it is 4 to 6 feet tall, though it may reach 10 or even 15 feet if the bushes are old. The edges of the rather large leaves are toothed, the teeth ending in small, spiny points. On the stems, at the base of each cluster of leaves, are three or more stout, sharp spines. The light yellow flowers and the red berries are borne in long clusters like currants. This bush, or any that resembles it closely, is harmful and should be destroyed.

Japanese Variety Harmless.

"In contrast to this tall bush there is a low spreading barberry, known as Japanese barberry, which in some localities is more widely planted than the tall or common barberry. The Japanese barberry is seldom over 3 feet tall and has small leaves with entire edges. The spines on the stems are only one in a place. The flowers are borne singly or in twos. The berries are a dark red in color, borne singly or in twos, like gooseberries, and have a thicker skin than those of the common barberry. This barberry is harmless, as it does not carry the stem rust, and should not be destroyed.

"If every property owner in the northern wheat-growing States of Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming cooperate, it will be possible to take this 'Old Man of the Sea,' black stem rust, off the shoulders of the wheat grower.

"Every property should be carefully examined for the harmful barberry and all bushes found should be eradicated so that no roots remain to sprout. No seedlings should be allowed to grow near it or under trees or bushes, along fences or streams, in brushy pastures, or in any place where birds might carry the seeds. In this way you help to increase the prosperity of your community by increasing the production of wheat and other grains and also help to supply more food for the whole world.

"Further information may be obtained from the United States Department of Agriculture or your State agricultural college.

Wide Interest Shown in Work.

"The wide interest taken in the work of eradication has been evidenced by the numerous requests received by the department during the past fiscal year for informational material for use in the infested areas. Lack of funds has hampered somewhat the department's campaign against barberry. It was able, however, to supply a large number of posters, bulletins, circulars, and other educational matter for distribution.

"A survey to locate barberries was begun in the larger cities because of the better means for spreading information. It was extended then to the towns, so that now nearly all cities and towns having a population of over 300 have been surveyed. An intensive survey of the entire rural area outside of the cities and towns has been begun. Already about 50 counties have been covered, the survey reaching every farmstead and all brushy pastures and woodlands in the entire area. This means traveling every section line, many half-section lines, and scouting the woodlands rod by rod. A very

Wheat—"Take him off and I can carry the rest."

important part of this survey is finding the escaped barberries which have started from seeds dropped by birds in thickets and pastures. Over 1,674,000 escaped bushes were found during the past year. A total of almost 1,900,000 bushes was found in rural districts last year. Records to date show that 3,865,426 bushes have been located and 3,705,142 bushes removed.

ADVISES FARMERS TO PLAN NOW FOR HANDLING SOFT-CORN CROP

(*Continued from page 1.*)

run some of it in the silo, using the entire fodder or just the ears, depending on the space in your silo. Even though you filled your silo previously, there is always considerable settling, which would make room for several tons of this shock corn.

The use of the silo in handling frosted corn is necessarily limited, because the silo capacity of the farm is usually sufficient to handle only a part of the crop, and the silos are often filled before frost injury takes place. The suggestions in the following paragraphs, therefore, are applicable only when frosts occur before silo filling is completed.

The entire corn plant can be put safely into the silo while very immature. Such silage is not as valuable as that from more mature corn, because of its lower feeding value and higher acidity. Properly balanced, it makes a satisfactory feed for cattle, however, and this is probably the best method of handling very immature corn. Good ensilage can be made from corn that has been frozen, but not from corn that is moldy. Because of the rapid spoilage of frozen immature corn and the rapid loss of water from it, it should be put into the silo as promptly as possible.

Soft ear corn also makes good silage and, if hogs rather than cattle are to be fed, earn corn silage will prove better than that made from the whole plant. It is neither necessary nor advisable to husk the ears before ensiling, as the husks serve to bind the small pieces of ears together so that moisture will be retained better, and also supply some sugar which is necessary for proper fermentation. For the same reasons, the inclusion of a certain amount of stover in the ensilage is beneficial. The addition of stover is essential if the ears are fairly well matured, as the pieces of hard ears will not pack well and there will not be sufficient sugar to provide for proper fermentation. Naturally as the percentage of stover in the silage is increased, the acreage of soft ear corn which can be stored in a silo of given capacity is reduced.

In making silage from soft ear corn the same principles apply as in making ordinary silage. The ears should be cut into pieces not more than 1 inch across, and smaller pieces are better. This cut material should be packed tightly in the silo by tamping, particular attention being given to that near the walls. Usually it will be necessary to add some water to ear corn silage. This should be added slowly, and only as much should be added as the silage will absorb without an excess settling to the bottom of the silo. The amount of water absorbed will vary with the condition of the crop. Corn that is quite milky will require little or even no added water, whereas corn in the late roasting-ear stage will require a ton of water to every 6 or 7 tons of corn. The silo should be covered with silage made from stover, to avoid loss of the more valuable ear corn silage below.

Silage made from ear corn is a much more concentrated feed than that made from the whole plant and must be fed accordingly. The inclusion of some stover in the silage is an advantage if cattle are to be fed, as it permits a more rapid removal from the silo, and consequently reduces the danger of spoiling during feeding.

Artificial Drying.

Some elevators are equipped with grain driers, and when one of these is available the soft-corn problem is solved. They are too few and far between, however, to be much of a factor in the corn belt.

The Iowa Agricultural Experiment Station reports that soft corn can be dried economically on the farm by placing wooden conduits in the bottom of the crib and forcing air heated to a temperature of 160° to 180° F. through them by means of an exhaust fan or a blower. By means of doors in the conduits the hot air can be forced into different sections of the crib. The moisture content of cribbed corn has been reduced in this way from over 20 per cent to less than 10 per cent at a cost of 3 cents per bushel for fuel and power. Conduits and ventilators can be provided for an average crib 48 feet long at a cost of less than $50 for material and labor. These estimates were based on 1917–18 costs, however, and would probably be somewhat greater now.

This method seems to be highly satisfactory. Apparently it has not yet been subjected to sufficient practical test to warrant unqualified recommendation. It might well prove practical and profitable on one farm and not on another. Moreover, a word of caution seems advisable as to the fire risk. The greatest care should be used in fitting the furnace chamber to see that there is no possibility of sparks being blown through into the wooden conduits and into the corn.

Salting Soft Corn.

Salting as a means of preserving soft corn first came into prominence during the fall of 1917. Experiments were undertaken at that time by the Iowa and Illinois agricultural experiment stations. The results of these experiments and observations of cribs of salted soft corn point to the following conclusions:

Salting corn is not a panacea, and there is no way to keep corn sweet without getting the water out of it. However, a half pound to a pound of salt to 100 pounds of corn will be highly beneficial in checking the development of mold and in preventing heating. Then, if ample ventilation is provided, the corn will dry out rapidly enough so that a fair quality of corn will result. The corn should be spread uniformly in the crib and the salt sprinkled over this evenly. Eight quarts to a 40-bushel load is the standard recommendation, and this may be increased to 16 quarts if the corn is very soft.

Too much emphasis can not be placed upon the necessity for ventilation. The salt will tend to draw the water out of the corn, and if this water can evaporate readily the moisture content soon will be within the limits of safety. Narrow cribs should be used if possible. If only wide cribs are available, these can be divided by A-shaped ventilators or by two rows of studding down the center of the crib, properly braced, and covered with 1 by 6 inch boards 1 inch apart. Woven-wire fencing with a mesh small enough to prevent the ears from falling through may be used instead of boards to cover the studding. The two rows of studding should be far enough apart to allow a good draft. Additional ventilators, horizontal, vertical, or both, also should be used. Six-inch tiles about an inch apart and extending either from end to end, side to side, or top to bottom, can be used for ventilators. They are subject to breakage, however, and a better device is made from two 2 by 8 inch boards, held about 8 inches apart by cleats. The cleats should be close enough together to prevent ears from falling in and choking the ventilators. Naturally, the cribs should be covered, since rain or snow on the soft corn would offset all the gains due to previous care in handling.

Immediate feeding is the best disposition for soft corn. Therefore feed all of it that you profitably can before it spoils.

If silos are available, the soft ears can be ensiled and the feeding period extended in this way with little or no loss.

The amount of ear corn silage should be estimated in advance, and enough stover silage should be mixed in during ensiling to utilize the full capacity of the silos if the silage is to be fed to cattle.

If artificial drying is available or can be economically provided, it is usually the most efficient method for handling corn that must be cribbed.

Such corn as must be cribbed without artificial drying should be allowed to stay in the field as long as it can without damage and then should be put into well-ventilated cribs.

In the absence of artificial drying, ventilation must be relied upon to remove the excess moisture.

Salting Retards Mold.

Salting down soft corn with from a half pound to a pound of ordinary salt to 100 pounds of corn will retard heating and the development of mold. It will also draw the moisture to the surface of the corn where it can evaporate more rapidly. Rapid evaporation should be made possible by ventilation.

Whatever disposition is made of soft corn, it should be sorted and the driest and most mature stored separately from that containing more moisture. This sorting should be by fields and parts of fields, so far as possible, to avoid extra handling. The ears also should be sorted as much as is practicable, particularly to get out any that are moldy or rotten.

Rotten ears can not be made into good corn, and will increase the damage to the good ears if all are stored together.

All of these recommendations are for reducing loss. Soft, immature corn can not be converted into sound, high quality grain. The latter can be obtained regularly only by growing varieties that will mature in slightly less than the average season.

Advices received by the United States Department of Agriculture from Brazil say that 80 per cent of the new cotton plants there have been destroyed by a small sucking insect of the family of lace bugs, which extracts the juice of the leaves, thereby killing the plants. The Brazilian cotton crop will be very short this year as a result, and Government scientists there are seeking means to check the ravages of the insect. No immediate danger is seen of an invasion of this country by the Brazilian insect.

Seeks Uniform Standards in Engineering—Secretary Appoints Men to Aid in Work

The United States Department of Agriculture recently became a member of the American Engineering Standards Committee. This committee is an organization originally made up of three members from each of the five founder engineering societies—American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Mining Engineers, American Institute of Electrical Engineers, and the American Society for Testing Materials. The committee was later enlarged to take in three representatives each from the Army, the Navy, and the Department of Commerce. More recently organizations dealing with safety codes and with fire protection have been admitted to membership on the committee. The purpose of the American Engineering Standards Committee is to bring about the adoption of uniform and satisfactory standards in engineering work.

Three Bureaus Interested.

The department is entitled to three representatives on the committee, and the Secretary of Agriculture has appointed one from the Bureau of Chemistry, one from the Bureau of Public Roads, and one from the Forest Service.

The Bureau of Chemistry is interested in specifications and standards for a variety of materials, including leather, paper, naval stores, dye, fiber products, vegetable and animal oils, etc. The bureau from time to time has prepared various specifications and methods of grading such materials based on results of extensive investigations.

The Bureau of Public Roads has done work on the standardization of specifications for road materials. It has had large experience in road work and has excellent facilities for observing the wearing qualities of various kinds of roads built under the direction of the bureau and otherwise.

Conducts Engineering Tests.

The Forest Service has taken part in the establishment of standards for forest products of various kinds for over 20 years, including the establishment of names for trees and woods, strength values, forms of construction, specifications, grading rules, etc. The Forest Products Laboratory of the Forest Service, at Madison, Wis., has for a number of years conducted extensive tests and investigations of forest products and assisted in the preparation of standards and specifications covering the use of wood in engineering construction.

The opportunity for bringing about increased efficiency in the use of engineering materials through the general adoption of carefully considered specifications is very large. The representatives of the Department of Agriculture who are members of the committee will be able to assist materially in furthering the work of the committee when dealing with the large variety of materials on which the department has conducted extensive tests and investigations.

The first meeting of the committee which the department representatives attended was held in New York, October 9. The representatives of the department appointed by the Secretary are: A. T. Goldbeck, Bureau of Public Roads; D. J. Price, Bureau of Chemistry; and E. H. Clapp, Forest Service.

FINDS CROW IS BOTH FRIEND AND NUISANCE TO FARMERS

That the crow's character is not so black as it is usually painted is disclosed by investigations made by the Bureau of Biological Survey of the United States Department of Agriculture. In fact, the department's "birdmen" say that much of the work the crow does is of direct assistance to the farmer, for "Mister Crow" wages warfare all summer long on insect pests. In fact, insects supply about one-fifth of its food, and those which he prefers in his diet are the worst insect pests the farmer has to contend with—grasshoppers, caterpillars, and white grubs and their parents, May beetles.

On the other hand, the crow raids the cornfield and the poultry yard, and kills small wild birds and destroys their nests. From the evidence at hand the crow's merits and shortcomings appear about equally divided. While it would not be well to give it absolute protection and thus afford the farmer no recourse when the bird is doing damage, the Bureau of Biological Survey believes that to adopt the policy of killing every crow that comes within gunshot would be equally unwise.

Wheat Stocks in U. S. 608,000,000 Bushels On October 1, Federal Estimates Show

Stocks of wheat in the United States on October 1 totaled 608,000,000 bushels, according to estimates of the United States Department of Agriculture. This amount represents 477,000,000 bushels held by farmers, 102,000,000 bushels held at country mills and elevators, and 29,000,000 bushels held at points of accumulation on that date.

On October 1, 1919, stocks of wheat in the United States totaled 747,000,000 bushels, representing 515,000,000 bushels held on the farms, 142,000,000 held at country mills and elevators, and 90,000,000 bushels held at points of accumulation.

During the first quarter of the present season—from July 1 to October 1—the farmers marketed 321,000,000 bushels as compared with 450,000,000 bushels marketed in the corresponding period of 1919—a reduction of nearly 29 per cent. The crop this year, plus the carry-over from 1919, is estimated at 798,000,000 bushels, or about 17 per cent less than last year. These figures indicate that farm marketings during the first quarter have been relatively, as well as absolutely, smaller than in any similar period last year.

The following table shows by States the estimated stocks of wheat on farms and in country mills and elevators in thousands of bushels:

State.	On farms.		Country mills and elevators.		Total.	
	1920	1919	1920	1919	1920	1919
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*	*Bushels.*
New York	8,200,000	7,500,000	500,000	800,000	8,700,000	8,300,000
Pennsylvania	19,800,000	19,100,000	1,900,000	2,800,000	21,700,000	21,900,000
Maryland	5,700,000	6,800,000	2,000,000	2,200,000	7,700,000	9,100,000
Virginia	7,200,000	6,600,000	800,000	1,100,000	8,000,000	7,700,000
Ohio	18,100,000	24,500,000	2,700,000	4,200,000	20,800,000	28,700,000
Indiana	8,700,000	16,800,000	3,200,000	6,900,000	11,900,000	23,700,000
Illinois	14,500,000	22,000,000	3,900,000	6,900,000	18,400,000	28,900,000
Michigan	9,800,000	12,100,000	1,200,000	2,000,000	11,000,000	14,100,000
Wisconsin	4,300,000	5,900,000	500,000	900,000	4,800,000	6,800,000
Minnesota	25,900,000	31,300,000	2,800,000	3,900,000	28,700,000	35,200,000
Iowa	6,900,000	10,100,000	1,300,000	2,900,000	8,200,000	13,000,000
Missouri	14,700,000	27,100,000	5,600,000	12,900,000	20,300,000	40,000,000
North Dakota	50,200,000	42,200,000	7,900,000	6,500,000	58,100,000	48,700,000
South Dakota	17,400,000	22,500,000	3,100,000	6,000,000	20,500,000	28,500,000
Nebraska	39,700,000	34,900,000	4,200,000	5,600,000	43,900,000	40,500,000
Kansas	83,900,000	93,800,000	22,800,000	23,800,000	106,700,000	117,600,000
Kentucky	2,500,000	3,800,000	1,400,000	4,400,000	3,900,000	8,200,000
Tennessee	1,900,000	3,500,000	1,000,000	2,800,000	2,900,000	6,300,000
Texas	4,300,000	12,400,000	2,000,000	4,500,000	6,300,000	16,900,000
Oklahoma	22,300,000	27,400,000	5,700,000	8,800,000	28,000,000	36,200,000
Montana	15,600,000	8,400,000	2,100,000	1,300,000	17,700,000	9,700,000
Washington	22,700,000	17,600,000	8,800,000	12,100,000	31,500,000	29,700,000
All other	72,800,000	58,500,000	16,200,000	18,800,000	89,000,000	77,300,000
Total	477,100,000	514,800,000	101,600,000	142,200,000	578,700,000	657,000,000

North Atlantic farmers received more for their wheat per bushel, by 10-year averages, than those of the other sections of the country from 1866–1875 to 1886–1895, after which they held second place and the highest prices went to the South Atlantic farmers.

A list of growers of pure sorghum seed has been issued this year by the Kansas State Agricultural Experiment Station at Manhattan, supplementing similar lists which have been published in the past on wheat, corn, and other principal cereal crops. The list is made from field inspection and enables farmers to tell the exact grade of sorghum or percentage of mixture with other varieties which is to be obtained from any grower. This service has been of great advantage to the farmers of the State.

EXPECT CASTOR-OIL OUTPUT TO REMAIN ON NORMAL BASIS

The manufacture of castor oil in the United States received a tremendous impetus during the war through the campaign launched by the War Department to secure large supplies of this product for use as an airplane engine lubricant. Peace stopped the abnormal demand for this oil, but as the industry has long been established, it will probably continue on a normal basis in spite of the lessening influence of war on the market, says the United States Department of Agriculture.

The Bureau of Plant Industry, in a publication prepared by one of its specialists, shows that the demand for castor oil is permanent and likely to become stronger as new problems of lubrication arise. This oil is used exclusively as the lubricant for certain types of airplane motors and was used widely as a general lubricant until the development of cheap, high-grade mineral oils replaced it, although it is still used in the tropics upon heavy machinery. Castor oil is often given preference as a lubricant as it retains its viscosity better under changes of temperature than any other vegetable oil.

There are many other uses for the 2,000,000 gallons of castor oil used annually in the United States. It is an important element in the manufacture of leather substitutes and in the methods of leather preservation. Belts treated with castor oil are flexible and will not crack, and the same may be said of shoes and harness. It is used in the manufacture of dye known as Turkey red. It is used also to lighten and soften rubber and to give elasticity to fine varnishes. It has a score of other industrial purposes to serve. The American oil market is protected by the fact that, in point of quality, the oil produced in the United States is not surpassed by the imported product and is often preferred by American manufacturers.

RICE DISEASE ERADICATION MAKES PROGRESS THIS YEAR

Much progress in eradicating straighthead in rice, which has done much damage in the plantations of Louisiana, has been made this year by the United States Department of Agriculture. Straighthead is a disease which prevents the rice heads from filling with grain, and gets its name from the fact that the heads thus affected stand up straight in the field instead of drooping like those filled with rice kernels. Losses vary from a fraction of 1 per cent in some plantations to 50 per cent in the worst affected fields. As the annual rice crop of the United States amounted to more than 200,000,000 bushels in 1918, the margin of loss to the country is appreciable. The cause of the disease has not yet been determined, but a method of control has been found by modifying the system of flooding commonly practiced.

A new fungous disease of rice has been discovered which is more widespread in its occurrence than a hurried observation would indicate. The plants attacked by this disease break over at the water line and are a total loss to the grower.

Wild ducks can be successfully propagated in many marshy localities. The United States Department of Agriculture has issued a new circular telling the most practicable breeds and how to handle them.

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REVEALS COST OF PRODUCING BEEF IN NORTHERN ILLINOIS

Results Obtained from Survey in DeKalb County During Past Two Years.

Figures Indicate Bulk of Cattle Studied Cost Producers Between $12 and $17 a Hundredweight, Laid Down at Market—Profits for 1919–1920.

Figures on the cost of producing beef in northern Illinois during the past two years, issued by the United States Department of Agriculture, indicate that the bulk of the cattle for which figures were obtained cost their producers between $12 and $17 a hundredweight, laid down at market. Counting corn at its cash farm price, 40 per cent of the cattle showed a profit in 1918–19 and 5½ per cent in 1919–20. Balancing what the farmers actually received against what they might have received if they had chosen to sell their corn instead of feed it, there is a presumptive average loss per head ranging from $7.89 for 2,668 cattle surveyed in 1918–19 to $34.78 for 3,543 head surveyed in 1919–20. Nevertheless some farmers, by careful feeding and especially by wise buying and selling made profits ranging up to as high as $50 per head and over in scattering instances.

Gains Show Wide Range.

These figures were gathered by the Office of Farm Management and Farm Economics, working in cooperation with the University of Illinois and the Bureau of Animal Industry, United States Department of Agriculture. The work was done in DeKalb County, 60 miles west of Chicago. During the winter of 1918–19 survey records were obtained for 72 droves (2,268 head) and during the next winter similar records for 83 droves (3,553 head) and detailed cost accounting figures for 25 droves (1,069 head).

It was found that the greater part of the cattle gained between 1 and 2 pounds per day, although the total range showed considerable variation. Cost per pound of gain, which must not be confused with cost of the entire animal, ranged from 10 to 60 cents for the cattle covered in the 1918–19 survey, with the bulk of gains lying between 20 and 35 cents. For 1919–20 the extreme range was from 7 to 58 cents for the droves covered in the survey and from 12 to 62 cents for those covered by the cost-accounting method. For over one-half these two groups gains ranged from 25 to 40 cents per pound.

The following table, based on the average returns for all the cattle covered in the study, shows the distribution of costs, total cost, credits, net cost, and selling price, figured on the basis of one steer:

Table Summary of Findings of the Survey.

Season cattle were fed: Winter of—	1918–19	1919–20	1919–20
Method of gathering data	(1)	(1)	(2)
Number of droves	72	83	25
Number of cattle	2,668	3,543	1,069
Original cost of feeder animal	$81.92	$78.75	$85.00
Operating expenses:			
Feed	86.72	89.54	88.18
Man and horse labor	8.60	8.22	5.57
Buildings and equipment charge	4.44	4.74	3.85
Interest	3.80	3.61	3.92
Death risk	.43	.34	.43
Veterinary	.10	.08	.08
Insurance	.04	.04	.02
Taxes	1.01	.83	.80
Incidentals	.64	.68	.72
Marketing	2.31	2.10	2.52
Total operating expense	108.09	110.18	106.09
Sum of operating expense and original cost	190.01	188.93	191.09
Manure and pork credit	23.85	20.45	21.42
Net cost	166.16	168.48	169.67
Sale price	158.27	133.70	143.57
Loss	7.89	34.78	26.10

[1] Survey. [2] Cost accounting.

Purchased feeds were charged at the actual cost to the farmer, and farm-grown feeds at the market price, less cost of getting the product to the shipping point.

BELIEVE TRUCKS SHOW PROFIT.

Out of 753 farmers owning motor trucks in 11 eastern States who answered a recent query of the United States Department of Agriculture 95 per cent said they believed the use of trucks would show a profit. Preference leaned toward a 1-ton truck. Bad roads constituted the principal drawback mentioned.

SECRETARY TELLS BANKERS OF THEIR DUTY TO FARMERS

Should See to It That Capital Is Directed Into Truly Productive Channels.

Urges Friendly Relations with Farmers, Giving Them Intelligent Aid—Tells of Achievements of Department in Building Up American Agriculture.

"I am delighted to have the privilege of talking to this great group of American business men. If there are still bankers of the Shylock type in the United States—and I suppose there are—I think I am safe in assuming that they do not attend the meetings of the American Bankers' Association. This organization, I believe, has the broader vision necessary to recognition of the fact that the interests of the banker are inseparably connected with the growth and development of the community, and to the exercise not only of judgment but also of initiative with reference to the lines of development undertaken. In speaking to you, therefore, I shall do so feeling confident that I am not addressing men whose aim it is to squeeze every possible penny out of each individual transaction, but men who, while giving to the question of security all the weight it deserves, nevertheless look to the immediate good and the future development of the areas served by their banks.

What Agriculture Means.

"I should be unfair to the institution I represent, as well as to those represented by you, if I did not at the outset make full acknowledgment of the very great aid that has been given by bankers to agriculture in hundreds of communities and in scores of great areas where a particular type of farming industry required financial help. Many times the bankers have been among the first to see the vision of their possibilities and have been steadfast to the end in financing their development. They have shown a commendable interest in agriculture and an appreciation of its relation to all business.

"The farming industry of this country is of considerable proportions, representing an investment equal to that of all the railroads, all the manufacturing plants, all the mines and all the quarries in the United States. Essentially, it is the basic industry. The income from live stock and crops for a single year practically equals the entire national debt. In other words, agriculture represents a permanent investment of $80,000,000,000, and its output last year was valued at $25,000,000,000. The greater part of the output of this enormous enterprise comes almost to the door of American business. The manufacturers receive from it, directly or indirectly, the materials that go to make up their finished products. Bankers employ their deposits in facilitating the exchange of products between the two. The railroads and other carriers, including the comparatively new and important enterprise of motor transportation, have as their principal purpose the carrying of commodities from one to the other. The merchant has on his shelves many of the products of the farm, and with many of them the farmer is the largest customer.

Work of Department of Agriculture.

"Tremendous sums of money are required every year to finance crop production and movement. It is incumbent upon bankers, therefore, to inform themselves fully regarding all phases of agriculture, to keep in touch with current crop and live-stock conditions as shown in the crop and market reports of the Department of Agriculture, to appraise properly the business factors which influence crop and live-stock production in the future, and to understand the work of the Federal and State departments of agriculture, the State colleges of agriculture, the extension service, and other public agencies for promoting sound agricultural practice. In no other way can they hope to deal intelligently, fairly, and adequately with the individual problems of their farmer clients or to cooperate effectively with Federal and State agencies in their efforts to make the business of farming more efficient, economical, and profitable.

"The United States Department of Agriculture is designed and operated to serve the Nation—the whole Nation—by promoting a better agriculture, and I believe it is faithfully discharging its responsibilities. It is dealing with practically every phase of production, seeking to build up a permanent and profitable agriculture through the elimination of plant and animal diseases and insect pests, which cause enormous annual losses, the working out and adoption of improved methods and practices, the development and introduction of new and better yielding varieties, and in many other ways. But I can not hope to tell you, in the brief time at my disposal, the complete story of what the department, through its 17 bureaus, has done and is doing; I can only give you a bare outline of some of its activities. Its Bureau of Plant Industry, for example, breeds improved strains and varieties of plants, introduces plants of possible economic value from foreign countries, tests seeds, experiments with different methods of cultivation, different combinations of fertilizers and soils, and all the artificial and natural factors affecting plant growth, and especially studies plant diseases and methods of overcoming them. Its Federal Horticultural Board inspects nursery stock and plants for diseases or insects. Its Bureau of Animal Industry studies all phases of animal husbandry, and especially the diseases of farm animals, their prevention and cure. It administers the animal-quarantine laws and is conducting active campaigns to eliminate hog cholera, the cattle tick, and tuberculosis of animals, as well as to build up the live-stock industry of the country by organizing cow-testing associations, better-sires campaigns, and the like. Its Bureau of Entomology studies plant and animal insect pests and develops methods of extermination. Its Insecticide and Fungicide Board inspects insecticides and fungicides to insure a high standard of purity and efficiency. Its Weather Bureau forecasts the weather, storms, freezes, and frosts, so that the farmers may take such measures as may be practicable to protect their crops, their orchards, and their live stock. Its Office of Farm Management specializes on the farm business, including cost of production, in the same way that efficiency experts specialize on business methods in other industries. It also studies various phases of country-life betterment. Its Bureau of Crop Estimates estimates the acreage, growing condition, yield per acre, present and prospective production and supply of crops, and numbers of live stock on farms, bridging the gap between the decennial censuses.

"I want to give you a few typical items, out of a large number that could be cited, which clearly indicate the value of the work of the department—and when I speak of the Department of Agriculture I have in mind also the agricultural colleges and experiment stations in the various States which are cooperating with it in so many important directions. We spent $250,000 establishing Durum wheat in this country. The Durum wheat now produced is worth $50,000,000 a year. We spent less than $200,000 in introducing a rice and establishing the industry in California. The rice crop in that State is now worth $21,000,000 a year. We spent $40,000 in introducing Egyptian cotton, breeding it up and establishing the industry in the arid regions of the Southwest. The American-Egyptian cotton crop is now worth $20,000,000 a year and is increasing every year. We discovered a serum that prevents hog cholera, and its use, as demonstrated by the department, has reduced the losses from that disease by $40,000,000 a year, but we are still losing $60,000,000. We spent a few thousand dollars in introducing grain and forage sorghums that could be grown in the Southwest where corn does not succeed. Last year 125,000,000 bushels of kafir and other grain sorghums were produced there. It was discovered that the fungus causing wheat rust—a disease that has destroyed as much as 200,000,000 bushels of wheat in a single season—overwinters on the common barberry bush, and we are now seeking to reduce these losses by eradicating the barberry. Wonderful results also have been accomplished in determining obscure causes of other plant diseases and in devising practical methods of control.

Guarding Against Animals and Insects.

"The Biological Survey of the Department of Agriculture is conducting a systematic campaign to reduce the losses caused by predatory animals on the western ranges, which destroy more than $20,000,000 worth of live stock every year; as well as those caused by prairie dogs, ground squirrels, and other similar rodent pests, which destroy annually more than $300,000,000 worth of crops and range grass. Hunters in the service of the department killed more than 25,000 wolves, coyotes, and other predatory animals last year, and perhaps an equal number of coyotes were destroyed by poisoning campaigns. It is estimated that live stock valued at not less than $6,000,000 was thus saved by an expenditure of only $564,000. At the same time the destruction of rodents resulted in a saving of at least $10,000,000, at a cost of $840,000.

"The boll weevil causes enormous damage to the cotton crop, but the department's experts, after many years of painstaking experiments, have at last found a successful method of controlling the pest with calcium arsenate. As a result the manufacture and sale of this product has reached tremendous proportions. Through the enforcement of the insecticide and fungicide act the department has been able to keep off the market

(*Continued on page 12.*)

Honor Kings and Queens of Dairydom—Some Sidelights on National Dairy Show

It was at the Amphitheater in Chicago. Steadily for 10 days early in October thousands of men and women came to pay tribute and praise. Her bovine majesty, the dairy cow, and her consort, the dairy bull, received the honors.

The event was the National Dairy Show. So important has this display of dairy cattle, of equipment, and of information become that the United States Department of Agriculture is a regular participant.

Fifteen Government Booths.

This year at 15 booths and exhibits in charge of Government specialists the public received information on its problems. Dairymen learned how to improve their methods of feeding and breeding, to obtain more milk from their cows, and maintain them more economically. They learned how to control and eradicate cattle diseases. They obtained useful facts by which to judge the trend of markets.

One feature of the Government exhibit was a Swiss-cheese factory in actual operation. Here, far from the original home of Swiss cheese, experts demonstrated that a high quality of this popular variety can be made practically anywhere in the United States when good milk is obtainable and methods developed by the department are used.

But more interesting perhaps than the exhibits themselves were the instances in which visitors obtained from them specific help or a clearer understanding of dairy matters.

"I have always known that good results in the dairy business depended on good cows," one visitor remarked, "but I never thought that bulls had so much to do with it." This comment followed an examination of pictures in Government exhibits dealing with cow-testing associations, bull associations, and the "Better Sires—Better Stock" campaign. One of the pictures showed how a dairyman who used a good bull obtained 5 heifers which gave on an average, in a year, 944 pounds of milk more than their dams. This means that the owner received about 4,700 pounds more milk from them than he would have obtained if the bull had been no better than the original cows.

Many visitors were surprised at the real and permanent prosperity which the dairy business brings. For the last six years the United States Department of Agriculture has helped to develop dairying at Grove City, Pa. At the outset there were no farm organizations and no dairy products were produced in excess of local needs. To-day there are four breeders' associations and clubs, 387 tuberculin-test herds, and within the last year the community shipped out more than half a million dollars' worth of dairy products.

At the invitation of the Government, the cashier of one of the banks of Grove City presided over a booth at the Dairy Show to explain how the growing industry is being financed. For that is a big problem now that the creamery there is drawing business from a radius of 15 miles as compared with 6 miles in 1914. "This is interesting," remarked one visitor who had merely glanced at the booths presenting these facts, "but do you think such a community will ever really exist?" In reply the banker assured him that the exhibits were models of a reality. Then he showed the visitor photographs of the farms, herds of cattle, the creamery, and the actual products going to market, also records of production which, though official, seemed fairy-like to a person who had farmed in the old way for years without getting much for his toil. The real purpose of the Dairy Show is to lessen drudgery, improve cattle and farms, make the distribution of dairy products direct and inexpensive, and to show the public that such products not only are pure foods but economical and necessary to human life as well.

Example of Market Service.

How Government work smooths out wrinkles that appear so often in large markets is illustrated by the experience of a butter buyer in Philadelphia, told at the show. He had purchased a carload of butter from a dealer in Chicago, but on arrival some of the butter appeared to be below the specified grade. The Chicago dealer contended, on the other hand, that it was not. So the services of a Government market inspector were procured. This inspector examined the butter where it was held in Philadelphia and on the basis of his decision the buyer and seller came to terms.

In discussing the incident with a Federal market expert at the Dairy Show, the Philadelphia buyer expressed his satisfaction with the service rendered. "You could have had even better service than that," the Government man replied. "The next time you ought to have the butter inspected at Chicago before it is shipped. Then you will know exactly what you are getting, avoid controversy, and prevent the need for adjustment later. We have a man at Chicago and other large markets for doing just that work."

Those are just a few incidents in which visitors learned more about the Department of Agriculture and the work it is doing for the public. The exhibits told most of the story, while those in charge of each display gave additional facts. Mingling with the crowds at the show were United States Senators, representatives of foreign governments, and dairy officials from far and near. These men occupied the side lines, to see the bovines compete for honors, to hear dairy experts tell of progress in various fields, and to watch little children stage a play depicting the merits and food value of milk. Here was real understanding that by the improvement of dumb cattle civilization will advance.

FEEDING TESTS SHOW VALUE OF BEEF-CATTLE RATIONS

A feeding test has been under way at Jonesboro, Ark., conducted by the Bureau of Animal Industry, United States Department of Agriculture, in cooperation with the State experiment station and the First District Agricultural School. The purpose is to compare various rations for maintaining a purebred breeding herd through the winter and to determine the best methods of raising purebred beef calves for breeding purposes. Then 10 Aberdeen-Angus, 10 Shorthorn cows, and 10 Hereford cows, with 1 bull for each breed, are being kept.

The work began July 1, 1919. The calves in lot 1 had a ration of grain fed in a creep in addition to their dam's milk. This lot made a daily average gain of 1.37 pounds. Lot 2, on milk alone, gained 1.06 pounds daily. Calves and cows ran on pasture.

On December 6, the cows were divided into three lots and fed for 112 days on the following rations, with the results indicated:

Lot 1. Corn silage, 40.58 pounds; cottonseed meal, 1.71 pounds; wheat and oat straw, 3.32 pounds; grain 0.04 pound. Daily average gain 0.61 pound.

Lot 2. Corn silage, 40.58 pounds; cottonseed meal, 1.21 pounds; cowpea and sorghum hay, 3.99 pounds. Daily average gain, 1.04 pounds.

Lot 3. Cowpea and sorghum hay, 16.38 pounds; wheat and oat straw, 2.83 pounds; coarse hay, 1.44 pounds; grain 0.12 pounds. Daily average gain, 0.13 pound.

SUCCESS MARKS FIRST YEAR OF BETTER-SIRES CAMPAIGN

Wider Recognition of Worth of Purebred Sires Among Outstanding Results.

During the Year 2,756 Persons Enrolled, Listing With Department a Total of 131,482 Animals and 170,030 Head of Poultry—Low Percentage of Scrubs.

A wider recognition of good purebred sires and definite knowledge showing how they improve domestic live stock are the outstanding results of the "Better Sires—Better Stock" movement, which completed its first year October 1. The purpose of the work is to improve the average quality and general usefulness of live stock in the United States.

Replacing Scrubs.

During the year 2,756 persons enrolled and each received an official emblem denoting participation in the movement. These persons listed with the department a total of 131,482 animals and in addition 170,030 head of poultry. According to a summary of results just made public, there is a very small proportion of inferior female stock in herds and flocks headed by purebred sires. Very few of the females are scrubs, only 2.7 per cent. With poultry the figures are still lower, 2.2 per cent. While livestock experts have generally recognized the beneficial influence of good sires on the quality of farm animals, the very low percentage of scrubs is a surprise even to officials in charge of the better-sires campaign. Taken as a whole, the majority of female animals bred to purebred sires are grades. But approximately two-thirds of the sows are purebred; also two-thirds of all the poultry listed are of pure breeding.

Centers of Activity.

Of the 46 States cooperating with the United States Department of Agriculture in advancing the merits and use of purebred sires, Virginia, Nebraska, South Carolina, Massachusetts, and Washington have been especially prominent. In Virginia 881 live-stock owners have signed agreements to use purebred sires in all classes of animals kept and to follow methods leading to further live-stock improvement. Progress has been measured and reported every three months since the campaign started. During the last quarterly period the greatest activity has been manifest in Nebraska, the work being especially prominent in Lancaster, Thurston, Dodge, Cuming, and Dakota Counties. The most active single county, however, was Greenville County, S. C., to which 177 emblems were awarded during the last three months.

Everyone who keeps any kind of domestic live stock is eligible to participation in this Nation-wide plan of improvement. The vast majority of those active in the work are farmers and stockmen; members of boys' and girls' live-stock clubs are likewise taking part. The improvement of all live stock in the United States is a fundamental step toward more economical production and enabling this country more effectively to meet foreign competition. Effective examples in support of this policy are the enrollments by President Wilson of his flock of sheep and by Secretary of Agriculture Meredith of his herd of dairy cattle in behalf of better sires.

New Facts Being Gathered.

In the administration of the improved live-stock program the United States Department of Agriculture is furnishing data, posters, illustrations, and other suitable material to persons interested in raising the quality of stock in their localities. During the coming year the work is to be amplified with a view to furnishing live-stock growers new and useful information on breeding. One branch of this work on the cause and prevention of runty live stock is already in progress.

BULL ASSOCIATION SUCCESS DEPENDS UPON COUNTY AGENT

One of the ways in which county agents can serve their communities when dairying forms a part of the farm operations is in organizing bull associations. Like many other progressive movements, the bull-association work owes much to the eagerness of the county agents to introduce all kinds of improvements.

An interesting example of this is found in a report which the State extension agent in dairying for Alabama made to the Dairy Division a short time ago. The work of the county agent mentioned in this report shows that specially favorable conditions are not requisite for the success of bull association work, which is really adapted to every kind of dairying district. The Alabama field agent in dairying writes as follows:

"In Baldwin County the county agent contributed liberally of his time and influence, with the result that a bull association was easily organized in what is unquestionably one of the least promising sections of the State. More thoroughly than ever I am convinced that one or more bull associations can be organized in every county in the State were the county agents to give the matter personal and enthusiastic support."

Since it is the general disposition of the county agents to give such support to helpful organizations, it may be foreseen that the bull association as an institution is likely to continue its past notable expansion, which has amounted to nearly 200 per cent in the last two years.

REPORTS BULL ASSOCIATIONS SHOW INCREASE THIS YEAR

In the count-up of bull associations for the last fiscal year made by the Dairy Division of the United States Department of Agriculture, associations are found all over the country. There are now 123, where there were only 78 the year before. This is an increase of 57 per cent. Thirty of the 48 States in the Union are on the list.

Associations are not equally numerous in all States, however, for four—Alabama, Pennsylvania, Mississippi, and South Carolina—furnish nearly half of the total. The number of associations found in each of these four States is as follows: Alabama, 7; Pennsylvania, 21; Mississippi, 11; and South Carolina, 17. Three of these leading States are in the cotton belt. Dairying is comparatively new in that part of the country, and the men going into the business are building on the right foundations from the start. One of the important foundations of effective and lucrative dairying is cooperation, and the extension work carried on by the Dairy Division and by the various State agricultural colleges has been the means of introducing efficient methods at the outset wherever dairying is taken up in the South.

Pennsylvania is an old-established dairy State, but has taken to the bull-association idea in a remarkable manner, and has in fact the largest number of all.

MUCH RANCH STOCK ENROLLED IN BETTER-SIRES CAMPAIGN

In the Western range States all kinds of sires—bulls especially—are receiving scrutiny by live-stock owners. There is increasing evidence that good purebred males have wide influence on the quality of young stock and on the returns from stock-raising operations.

One day recently the United States Department of Agriculture enrolled in the "Better Sires—Better Stock" movement several ranchmen, each of whom had more than 1,000 head of live stock. One flock of sheep contained 250 purebred ewes and 3,450 crossbred ewes, the

sires being all purebred. A cattle raiser who enlisted in the campaign the same day notified the department: "I have disposed of two grade Hereford bulls recently, having decided to run nothing but purebred sires." This remark is typical of the progress of the movement in Montana.

EYE TEST SERVES AS CHECK UPON CATTLE TUBERCULOSIS

The eye test for detecting tuberculosis in cattle has the approval of the scientists of the Bureau of Animal Industry, United States Department of Agriculture. The ophthalmic or eye test is used as a check upon the older methods, as it happens occasionally that an animal that will not react to the subcutaneous injection or intradermal test will react to the eye test.

Two tuberculin tablets are placed in the conjunctival sac beneath the lower lid of the left eye, and observations are taken at approximately the third hour following and at frequent intervals up to 24 hours. Reaction to the test is indicated by discharge and swelling.

The Bureau of Animal Industry is not prepared to accept the evidence of the eye test alone where cattle are intended for interstate shipment. The test, however, furnishes an additional safeguard when used with the older method.

The eye test is not well adapted for use upon range cattle or cattle in transit, because of the possibility for dust setting up an irritation not related to tuberculosis. It has its best use on the dairy farm, where conditions are such as to give sure results.

The experts have observed that in herds which are frequently tested by the subcutaneous method it is advisable to apply the intradermal and the eye test. The combined tests sometimes detect reactors which have escaped detection by other means.

Corn prices at the farms of producers have been highest in the Rocky Mountain and Pacific States, in averages of periods of years, from 1866–1875 to 1896–1905, after which the highest place has been held by the South Atlantic farmers.

Somewhat above the average in quality, the winter wheat crop of the United States harvested in 1920, it is estimated by grain handlers in reports to the Bureau of Crop Estimates, grades approximately 30 per cent as No. 1, 42 per cent as No. 2, 18 per cent as No. 3, and 10 per cent below No. 3.

A PETITION IN BANKRUPTCY

In the accompanying illustration there is an easily understood and important lesson, namely, that nature eventually puts an extinguisher on anything that has outlived its usefulness. Four of the animals shown here—the dodo, dinosaur, plesiosaurus, and mammoth—belong to an age long past, and the causes of their extinction are summed up in one word—"bankrupt."

Has No Place in Poetry.

But the animal in the center of the picture, the scrub bull, is of our own times. No effort of the imagination is needed to picture the scrub; no veil of time hides him from our sight; and there is no place for poetry or romance in the recital of his history. There may be room for speculation, interesting if not profitable, about the mammoth, as to what manner of creature he was and what his uses were, when he roamed the earth. But no roseate tinge adds beauty to the scrub. He is touched only by cold, stern, and unlovely facts. And some of them are these:

The scrub bull is wholly lacking in the qualities necessary for the production of high-class stock, and he is grossly inefficient at a time when the highest efficiency is needed.

Such are the short and simple annals of the American scrub bull.

But the future looks bright. Hundreds of intelligent farmers and stockmen are already at work in cooperation with their States and the United States Department of Agriculture in its "Better Sires—Better Stock" campaign to eliminate not only scrub bulls but all scrub sires from American herds. The day of the pure-bred sire is at hand, and his coming means instant and steady improvement in live-stock conditions in America. There are difficulties to be overcome, but the American stockman is equal to the task. Before many years it will be said of the scrub sire, as it is now said of the dinosaur and the mammoth, that it became extinct because it was one of "nature's bankrupts and could not meet human requirements." And all who have pride in American progress and leadership will do what they can to make the saying literally true.

BANKRUPTS OF NATURE—THEY COULDN'T STAND OR MEET HUMAN REQUIREMENTS.

Supplies Figures As to Cotton on Hand—Specialist Answers Inquiry of Cotton Man

In reply to a request from J. S. Wannamaker, president of the American Cotton Association, the following statement as to the cotton on hand in the United States on July 31, September 1, and September 30 was prepared by the specialist in charge of the Division of Cotton Marketing, United States Department of Agriculture:

"I have received your recent letters requesting a statement as to the cotton on hand in this country on July 31, September 1, and September 30.

The Carry-Over Estimate.

"Preliminary figures issued by the Bureau of the Census indicate that the total carry over of cotton, exclusive of linters in the United States on July 31, 1920, was 3,563,162 bales. Included in this number are 283,499 bales of cotton of foreign growth and 24,445 bales of Sea Island cotton. Deducting these figures from the total carry over would leave a carry over of American cotton in America on July 31, 1920, of 3,255,218 bales. Of this number there were in consuming establishments 1,192,965 bales, and in public storage and at compresses 1,912,080 bales, which would leave the 'elsewhere' 150,173 bales. This 'elsewhere' is an estimate of the number of bales of cotton other than those in consuming establishments, public storage, and compresses.

"I understand that the Census Bureau has no records which would enable it to state the grades of this stock, but its reports show that about 580,000 bales of 'bollies' were ginned last season. It is common belief that the cotton on hand in public storage on July 31 was to a very great extent of very low grade and unsuited to the present demands of most spinners.

"With reference to bringing figures up to September 1, taking the figure of 3,255,218 bales, the carry over of American cotton in America on July 31, adding the August ginnings of 367,241 bales and deducting the August exports of 144,979 bales (exclusive of linters) and the American consumption of 448,106 bales (exclusive of foreign and Sea Island cotton and linters), the quantity of American cotton in America on August 31 would be indicated to be 3,029,374 bales.

"With reference to your request that these figures be brought up to September 30, it might be said that inasmuch as the final figures showing consumption by American mills and exports for the month of September will not become available until about the 15th of October, no very accurate statement can be made on this subject at this time.

"It should be borne in mind that the significance of any figures showing the quantity of cotton on hand at any time after ginning of the new crop has begun in a substantial way is impaired by the fact that such figures are largely influenced by the relative progress of ginning."

When the forest lookout on Tahquitz Peak, in the San Jacinto district, California, was incapacitated this fall Mrs. Reindorp, wife of the district ranger, donned khaki, loaded blankets and grub on a horse, and took over his duties, holding the lookout post for more than a week. This is one of the incidents reported to the United States Department of Agriculture through the Forest Service.

Brown spot of corn is present throughout a large part of the corn-growing section east of the Rocky Mountains. The disease is caused by a minute fungous parasite. Damage may amount to 10 per cent, but is lower in most sections. Careful field sanitation, crop rotation, and seed selection are recommended by the United States Department of Agriculture as an aid in controlling the disease.

POOLING THE WOOL CLIP PERMITS COLLECTIVE SALE

The advantage of wool pooling and cooperative selling may well be outlined as permitting the growers to sell their wool collectively in a large volume, thus attracting a large number of buyers and making possible the payment of the full value of the wool. The larger buyers are not attracted by individual clips unless they are of considerable magnitude, such as some of those produced by the larger ranchers in the West. Nor is the local buyer able to pay the full price for wools which must be purchased a few fleeces at a time and carried at his personal expense and risk until sufficient volume has been accumulated to permit his shipment to some central wool market.

Volume handling such as is possible where the entire clip of the community is sold collectively reduces the cost per pound of buying and handling and will permit the purchaser, whether a local wool merchant or some outside buyer, to pay a higher price per pound than is possible where it is necessary to purchase the wool in small lots.

The Bureau of Markets, United States Department of Agriculture, is constantly giving assistance to cooperative organizations in the way of organization practices and selling methods and will be glad to extend similar service in the cooperative marketing of wool.

BEAN GROWERS COOPERATE PROFITABLY IN MARKETING

Not wooden shacks, but permanent structures of stone mark the prosperity of Mountainair, N. Mex. No oil has been found, nor yet rich mineral deposits. The community has simply struck beans!

Although pinto beans have been grown in New Mexico for a good many years, where the industry was spasmodic and unorganized, it was not until a year or so ago that the possibility of greater profit was realized. The field representative of the Bureau of Markets, United States Department of Agriculture, informed the growers something of what had been accomplished by cooperative marketing associations throughout the United States, and assisted them in organizing the New Mexican Bean Growers' Association, which now embraces 14 local associations.

It has been conservatively estimated that as a result of cooperative selling $75,000 of additional profits were earned by the pinto-bean growers last year, and that they saved $7,500 alone through the cooperative buying of bags in carload lots. With a larger margin of profit for the efforts exerted by the producers, the future of the industry seems assured. Pinto beans are now being sold at 25 cents per hundred pounds in carload lots over quotations on C. H. P. navies.

Shade trees and ornamental shrubs in the United States represent a value of one billion dollars, according to the estimate of the United States Department of Agriculture. Ten million dollars damage is done annually by shade-tree insects.

Wild animals know where they can find protection, says a United States Department of Agriculture circular on the fur industry. In places where there are game sanctuaries, wild creatures hasten to them at the beginning of every open hunting season.

A Few Cautions on Making Farm Leases—Written Contracts Better Than Verbal

The farm-lease contract is among the most troublesome features of the farming business, and one of considerable importance in view of the fact that the 1910 census—the results of the 1920 census are not yet available—shows that 37 per cent of all farms are operated by tenants and another 9.3 per cent by owners who lease additional land. It is estimated that part or all of the land and improvements of about 3,000,000 farms are rented, and that, while the average length of tenancy is three years, the majority of lease contracts are for one year, making about 2,000,000 lease contracts to be made or renewed each year.

A Written Lease Preferable.

For the guidance of tenants and landlords who wish to avoid trouble through misunderstanding, the United States Department of Agriculture has issued a bulletin on the farm-lease contract—Farmers' Bulletin 1164—which may be obtained free on application.

A written lease is much more satisfactory than a verbal one, this bulletin points out. If one of the parties should die, a written contract protects his estate from false claims by the other party. Moreover, it serves as a memorandum to both parties so that the actual terms of the contract may not be forgotten.

The principal points to be considered in the farm lease, which are dealt with more or less at length in the bulletin, are:

Date, names of parties, time of duration, manner of termination, description of property, reservations, assurances and guaranties by both parties, agreements with respect to credit, respective contributions by both parties of operating capital and to expenses, adjustments regarding property owned in joint account, payment of rent; specifications with respect to the care, use, and improvement of real estate; specifications with respect to farming method and procedure, provisions for supervision, procedure at termination of lease, enforcement of contract, and final details.

SHRINKAGE OF MARKET HAY.

Shrinkage occurring in good market hay is due almost entirely to a loss of water, which has no feeding value, say specialists of the United States Bureau of Markets. Such shrinkage seldom causes an actual money loss to the farmer, because any loss in weight in baled hay is borne by the shipper, who usually receives the hay as soon as it is baled.

If the shipper stores baled hay for speculation, there often will be a money loss caused by shrinkage, because he has purchased an excess amount of water.

There is practically no loss of dry matter in market hay that has been properly cured. Proper curing is indicated by a bright, natural green color. Improperly cured hay may lose dry matter, but such hay is not in demand in any of the terminal markets.

The water content of hay at different periods of curing and storage, methods of making hay to prevent excessive shrinkage in storage, methods of determining shrinkage on individual farms, and other general shrinkage information of interest to all agencies engaged in the production and marketing of market hay is given in a publication soon to be issued by the Department of Agriculture.

OIL ON THE TROUBLED SANDS SOLVES ROAD-MAKING PROBLEM

Shifting sand dunes which cover up a highway soon after it is completed have formed a serious obstacle to improved road building in some parts of the country, particularly in the Northwest. To remedy the evil, the Bureau of Public Roads of the United States Department of Agriculture has employed a more extensive application of the agency that has been used in the past to lay dust on ordinary highways—oil.

Fifty-three miles of construction of the Columbia River highway from The Dalles eastward lies through sandy country, in many places of a volcanic ash as light as flour. As fast as cuts are opened up and fills made in this light soil the wind whips out the fill slopes and sand dunes creep into rock cuts, completely blocking the road. Oil is the only agency yet found to stop the trouble. The equipment used to spray the crude oil consists of two supply tanks, or drums, in which the oil is carried from the storage tank at the railway siding, and a tractor, which draws the oiling rig and supplies the steam through a hose to the compressor tank, which is carried on a trailer. The oil is heated by the steam and forced through a hose with a nozzle consisting of a half-inch pipe. The steam atomizes the oil and sends it in a fine spray for 100 feet or more, depending on whether the spray is projected in the direction of the wind or against it. For obvious reasons, spraying is usually carried on in the direction of the wind.

Where sufficient oil is used, this means of controlling the sand dunes is very effective, and it is believed that the cost will not be excessive, though exact figures are not obtainable at this time.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended October 23, 1920:

Waterproofing and Mildewproofing of Cotton Duck. Farmers' Bulletin 1157.

Forestry Lessons on Home Woodlands. (Professional Paper.) Department Bulletin No. 863.

The Inheritance of the Length of Internode in the Rachis of the Barley Spike. (Professional Paper.) Department Bulletin No. 869.

Manufacturing and Laboratory Tests to Produce an Improved Cotton Airplane Fabric. (Professional Paper.) Department Bulletin No. 882.

Utilization of Sycamore. Department Bulletin No. 884.

Pear Borer. Department Bulletin No. 887.

Results of Experiments with Miscellaneous Substances Against Chicken Lice and the Dog Flea. Department Bulletin No. 888. (Professional Paper.)

Milk-Plant Equipment. Department Bulletin No. 890.

Forest Trails and Highways of the Mount Hood Region. Department Circular 105.

A System of Field and Office Records for County Extension Workers. Department Circular 107.

Chicory: Control and Eradication. Department Circular 108.

The Manufacture and Use of Peanut Butter. Department Circular 128.

Milk for the Family. Department Circular 129.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 1157; Department Bulletin No. 863; Department Circular 105.

Weekly News Letter

Published every Wednesday by the
UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS
Harlan Smith, Chief

PRESS SERVICE
Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

TAKING THE FIGHT FOR FOOD PRODUCTION TO THE ARCTIC

The United States Department of Agriculture is encouraging the development in Alaska of a considerable crop, grain, and live-stock industry adapted to the comparatively short growing season of that Territory. It has five agricultural experiment stations in Alaska, the work of which is covered in a report to the Secretary of Agriculture by C. C. Georgeson, agronomist in charge. They are located at Sitka, Kodiak, Matanuska, Fairbanks, and Rampart, the latter being just under the Arctic Circle, where the temperatures range from plus 88° to minus 63°.

These agricultural stations have done considerable work in breeding and establishing new varieties of grains, berries, fruits, and economic plants suited to the short season and the raising of domestic animals of all kinds, of which there is great need in Alaska because of its remoteness from the rest of the world.

At present the largest farming settlement is in the neighborhood of Fairbanks, in the Tanana Valley. About 5,000 bushels of grain was raised in the vicinity of Fairbanks in 1919.

One of the big problems of Alaskan agriculture, especially in the northern parts, is the conservation of moisture. When the ground is first cleared, the soil is frozen nearly to the surface the year around. The first few crops require only a slight rainfall, since the ice in the ground gradually melts, furnishing sufficient moisture, which by capillary action rises to the roots of the growing crops. In the course of a few years, however, the ice recedes to a depth of 6 or 7 or more feet, and this reservoir of moisture is no longer available for the crops. It then becomes necessary to use machinery which will not only pack the soil a few inches below the surface and thus hinder evaporation, but at the same time maintain a surface mulch of loose soil, which, by hindering evaporation, conserves the moisture. The average rainfall in the Tanana Valley is only about 12 inches.

HEARING TO CONSIDER STEPS AGAINST CITRUS BLACK FLY

Edwin T. Meredith, Secretary of Agriculture, has called a public hearing to consider the advisability of quarantining Cuba, the Bahamas, Jamaica, Canal Zone, Costa Rica, India, Philippine Islands, Ceylon, and Java on account of the citrus black fly, an insect pest which attacks many plants in the regions named and which is not known to occur in the United States. There is danger of bringing this insect into this country in connection with shipments of fruits and vegetables, in the raw or unmanufactured state, with plants or portions of plants used as packing material or otherwise, and in litter and rubbish in railway cars from Cuba, as well as in or on the cars themselves. The hearing will be held in room 11, Federal Horticultural Board, United States Department of Agriculture, Washington, D. C., at 10 o'clock, December 20, 1920. All persons interested in the proposed quarantine may attend and be heard either in person or by attorney.

The restrictions which may be placed on the movement of the products named on account of the citrus black fly will not necessarily be an embargo, as provision will probably be made for the entry of fruits and vegetables at certain designated ports after inspection, and, if necessary, cleaning or disinfection under the supervision of an inspector of the department. Disinfection may also be required of all railway cars and other vehicles from Cuba, as well as the thorough cleaning of railway cars of all litter and rubbish before embarkation.

MANY FACTORS FACE FARMER IN TRACTOR-HORSE PROBLEM

With the introduction of practical types of mechanical power on farms, the farmer must face the question of whether he should substitute the tractor for some of his horses. If he decides to introduce the tractor, he must determine what combination of horse and mechanical power will be the most profitable on his particular farm. To answer these questions accurately requires reliable information as to all the facts involved.

The choice of sources of farm power depends upon their relative profitableness. To determine which is the more profitable it is necessary to consider many factors, among which are the power requirements of the farm, the size of the power units required, the quality of work to be accomplished, the displacement of one form of power by the application of another, the total possible utilization of each form of power, the comparative cost of operations with the different forms of power, the relation between the kind of power and the effectiveness of farm labor, and the effect upon the profits of the farm as a whole.

The United States Department of Agriculture has made a study of power units on a number of representative farms with a view to showing how the various farm operations create demands for different-sized power units, and to what extent power requirements are influenced by the type of farming. The results of this study, summarized in a publication entitled "The Horse Power Problem on the Farm," will be found of value to the farmer who is contemplating a change in the form of power used on his farm.

DISEASE-FREE SEED CORN YIELD BETTER, TESTS SHOW

Seed corn that gave 100 per cent germination but showed infection by harmful organisms was matched against corn that showed no infection in a series of tests carried out by plant specialists of the United States Department of Agriculture in cooperation with the Indiana Experiment Station. The disease-free seed gave an increased yield of 10 to 30 per cent above its competitor.

Further results of the test seemed to prove that when corn was planted too thickly in hill or drill row it was more susceptible to disease than when better space was given it. In a similar test at Bloomington, Ill., the disease-free seed gave an increase of 23 per cent over the other corn, which was selected for high germination only. At Hoopeston, Ill., the difference, measured in tons, ranged from 0.01 ton to 1.5 tons in favor of the seed selected both for high germination and freedom from disease.

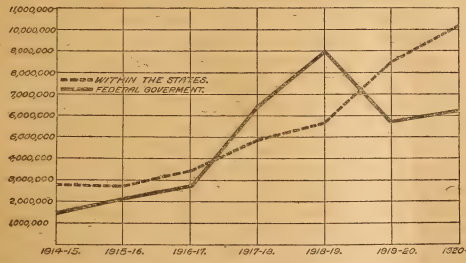
The selection was based on the absence of discoloration in the kernels and cobs as indicating soundness. Disease is indicated by brown discoloration at the butts of the ears and at the kernel tips and by decay in the cobs.

SUPPORT OF COOPERATIVE EXTENSION

When the Smith-Lever Act went into effect the total funds available were $3,600,000, of which $2,100,000 was contributed from sources within the State and $1,500,000 by the Federal Government. The Federal funds consisted of $90,000 appropriated direct to the United States Department of Agriculture for farmers' cooperative demonstration work and $480,000 appropriated to the States under the provisions of the Smith-Lever Act. Of the funds contributed from within the States $1,000,000 came from direct appropriations of the State legislature and from funds under the control of the college. The remainder of $1,100,000 came from sources within the county. During the war the regular funds of the department were supplemented by emergency appropriations, so that the maximum contribution from the Federal Government reached over $9,000,000 in 1918–19. During that year there was contributed from sources within the States $5,600,000. However, in the place of the direct contributions to the department Congress provided $1,500,000 for the following years which is to be used under the same conditions as the Smith-Lever fund. In 1920–21 the total contributions from the Federal Government were $6,300,000, comprising slightly over $1,000,000 for farmers' cooperative demonstration work, $3,580,000 under the provisions of the Smith-Lever Act, and $1,500,000 supplementary funds. The funds from the States have increased decidedly from 1914–15 to date until the total is $10,200,000. The total from the States and colleges is $4,600,000 and the total from within the counties is $5,600,000.

It is interesting to note the ratio of the contributions from the Federal and State sources. In the beginning the ratio was $3 from within the State for every $2 contributed by the Federal Government. This ratio was reversed during the war, but at the present time the contributions are practically on the same ratio as when the work was undertaken. The most interesting feature in connection with the movement has been that throughout the entire period over 30 per cent of the funds used for extension work came from the local county governments or from direct contributions of the farmers themselves. These facts seem to show their faith in the work and its importance to them.

COMPARISON OF FEDERAL AND STATE FUNDS FOR EXTENSION WORK.



The advantages of fall seeding of oats over spring seeding wherever the fall-sown varieties can be grown are numerous, says the United States Department of Agriculture. The yields are usually better, the fall-sown oats mature earlier, the land can usually be prepared in better shape in the fall than in the spring, fall seeding interferes less with other work than does spring seeding, poorer land and less fertilizer can be used for the fall-sown crop, and the fall-sown crop furnishes a cover for the soil during the winter and prevents washing.

DESCRIBES CITRUS FRUIT GROWING IN GULF STATES

"To what extent can citrus fruit be grown in the South?" "How can losses, such as citrus growers suffered in the past, be avoided?" "Can money be made in the citrus industry?"

Because these questions have been asked so many times and because there is a widespread interest in the subject, the United States Department of Agriculture has made a special study of conditions in the Gulf States, the results of which have been published in Farmers' Bulletin 1122, "Citrus Fruit Growing in the Gulf States."

This bulletin briefly sketches the development of citrus fruit growing in Florida and the other Gulf coast sections, points out some of the unfortunate experiences of growers in the earlier years and the lessons taught by those experiences, emphasizes the importance of choosing suitable locations, sites, and soils, and gives information concerning grove management, including the preparation of the soil, planting the trees, methods of tillage, use of fertilizers, pruning, protection against frost injury, and the other operations that count in the successful production of citrus fruits.

The more important varieties of the different citrus fruits, especially for Florida conditions, are discussed; also many other matters that the grower or prospective grower needs to know about. The prospective grower, who is not familiar with conditions in the regions to which he may turn his attention, is advised not to make any investments until he personally examines the land on which he proposes to locate.

This bulletin, which may be obtained free on request to the United States Department of Agriculture, is intended to help not only the prospective and the inexperienced grower, but also to give experienced growers a better understanding of the most satisfactory methods in use in the regions with which they may not be personally familiar.

MAY RESTORE CHESTNUT ORCHARDS.

Chestnut orchards which have been practically annihilated by a blight of Japanese origin may be restored through efforts of the United States Department of Agriculture. Ten years' experimentation has shown that it is possible to cross the chinquapin, a dwarf chestnut, with the Japanese chestnut, which is blight resistant, and that the hybrid trees thus produced are quite resistant to the disease and yield nuts of good flavor and quality.

One case reported to the United States Department of Agriculture indicates how fur prices are advancing, with increased demand and decreasing supply. A man bought a mink-lined overcoat for $500 in 1915. Two years later he sold the mink lining for $1,000 and replaced it with nutria for $150. He wore it two years and sold the nutria lining for $250, putting in a muskrat lining that cost $55. In 1919 he sold this lining for $300, and still has the shell and $845 clear profit.

Careful Cutting Makes Woodlot Profitable—Neighbors Should Cooperate in Marketing

With the help of the Forest Service and the county agent, a number of farmers who live in Hangman Valley, Wash., just north of the Palouse Division of the St. Joe Forest, are cooperating this year in the sale of about 300,000,000 feet of timber.

A Request for Aid.

Last fall the Forest Service was requested to aid these farmers in disposing of a considerable amount of timber on their claims. It developed that there were approximately 200 settlers who owned about 300,000,000 feet of timber which they desired to dispose of as a unit in order to attract some company capable of handling the entire proposition. They were, however, unable to agree upon a satisfactory price. The project had been worked up by the local county agent, a former Forest Service man, from whom the request for help came.

The Forest Service agreed to make an appraisal of the timber and to assist in drawing up a contract and sale conditions. The appraisal was made last spring and a price fixed of about $3.50 per thousand feet. Although the land is well adapted to agriculture, it will not be possible for the owners to put all of it into cultivation for a number of years. Consequently it is to their advantage to devote it to growing timber until such time as it is needed for raising crops. The stand consists of yellow pine of a good quality and contains a large number of trees just below merchantable size which will make rapid growth when the old timber is removed. It is distinctly a case where it will pay the farmers to grow trees. These facts were explained to the members of the association and they quickly saw the advantage of handling the forest in the manner recommended. In order to save the young growth they agreed to sacrifice 30 cents per thousand on the stumpage price.

Farmers in general who own small bodies of timber will find it profitable to cooperate with their neighbors in marketing their grown timber. In many cases the individual amounts are too small, as in the above instance, to make it profitable for their owners to advertise for bids or for sawmills to come in. When care is taken in selecting and cutting timber a woodlot may be made a source of income to its owner for an indefinite period of years.

FARM BOOKKEEPING.

Farmers, as a rule, are highly individualistic in their methods, and farm business conditions vary widely. Accordingly, ready-made systems of farm accounts seldom bring out all the facts that the farmer ought to know. Systems must be developed to fit each man's requirements, and efforts to shape one's needs according to a prepared system not based primarily on these needs will almost inevitably result in failure. Write the United States Department of Agriculture, Washington, D. C., for Farmers' Bulletin 511, containing an outline of the principles of simple farm bookkeeping.

Tests made by the United States Department of Agriculture with 130 lots of Australian wheats recently introduced into this country have brought out three varieties adapted for growing on the Pacific coast, where they have produced larger yields than some of the native commercial varieties. They are known as Federation, Hard Federation, and White Federation. The Australian varieties in general are susceptible to most cereal diseases, but many of these are not destructive in the Pacific coast region.

MILK IS FAVORED LUNCH IN MANY UP-TO-DATE FACTORIES

In modern factories an increasingly common sight is a push cart loaded with half-pint milk bottles being wheeled down the aisles about the middle of the forenoon. The Dairy Division of the United States Department of Agriculture has been doing much educational work on the value of milk as a food in the factories within the past 18 months, and the amount of milk now being drunk by factory employees is good testimony to the fact that the beverage is all that is claimed for it.

The conditions found in one Springfield, Mass., factory which has 700 employees are typical of many other places. The milk specialist in that county spoke to the factory force, which consists of both men and women, during the latter part of July. The manager stated that he had been considering the proposition and was willing to have milk distributed throughout the factory during working hours. The next day the plan was put into operation. The milk cost the company 4 cents a half-pint bottle, and to cover the cost of distribution was sold for 5 cents. For the first day 100 bottles were ordered. This proved insufficient and 300 were ordered for the second day. This still proved too small a quantity, and 500 were ordered. After a week or two, 700 bottles a day were being consumed. In August the price of the milk was raised to 5 cents a bottle, and 6 cents was charged the employees for it. There was a falling off in the demand; so the manager, convinced of the value of the lunch to the men and women, put the price back to 5 cents; and the factory paid for the cost of distribution.

The efficiency of the force is much increased by the milk lunch, the manager states, for many of the men come to the factory having had no breakfast. Less time, too, is lost from the machines than when the men left them and went to their lockers for sandwiches.

TELLS WILD-DUCK FANCIERS HOW TO RAISE YOUNG BIRDS

Uncle Sam is the best friend the wild ducks have, and it follows that he has a warm spot in his heart for the wildfowler, too. In the interests of both he has prepared a leaflet on the propagation of wild ducks which may be had from the Bureau of Biological Survey, United States Department of Agriculture, by anyone who asks for it.

Mallards are the easiest to handle, with wood duck coming next. Black ducks need more space than either of these because they are more sensitive—a bit "wilder." Widgeon and teal need winter shelter, if grown in the North, to a greater extent than their cousins, but the provisions for shelter need not be elaborate. For most ducks and most climates a simple, three-sided shack is sufficient, though extreme cold weather should find the ducks housed in a tight building with plenty of litter on the floor.

Fresh infusions of wild blood must be introduced from time to time if the birds are to keep their wild conformation.

Wild-duck eggs are usually hatched under hens, though they may be hatched in an incubator. Breeding stock of whatever species should be obtained in the fall so as to be settled in its quarters before the breeding season, which comes rather early in spring. The leaflet describes the care and feeding of the young birds at every stage in their development from the yellow fuzz of the duckling to the gleaming iridescent feathers of the mature bird. It is a leaflet that should interest sportsmen as well as the game farmer.

American hemp is now used extensively with flax in shoe thread, the United States Department of Agriculture finds. Without the Russian supply, flax is not available in sufficient quantities to supply the demand.

Bringing Silver Tip Grizzly to Account—Pays for Long Career of Depredations

Silver Tip Grizzly is dead.

He was a bad actor.

This is the epitaph that the Biological Survey of the United States Department of Agriculture conceived when it received a letter from Charles J. Bayer, predatory animal inspector of the bureau, at Lander, Wyo., telling of the end of a 1,000-pound monarch of beardom which has been killing stock in the vicinity of Dubois, Wyo., for several years. A 50-pound No. 6 bear trap anchored to a 24-foot tree trunk was Silver Tip's undoing; but he broke the tree and tore a swath 8 miles long through the forest before he finally gave up the ghost. Fifteen dead cattle, each killed with a crushing blow beneath the eyes and each with the liver removed as a bear delicacy, marked the trail to the point where the animal was trapped. A $100 bounty had been placed on Silver Tip's head by stockmen. They were saved this money, however, as Government hunters are not allowed to accept bounties from any source. Another stock killer has thus been removed from the range.

Inspector Bayer Tells the Story.

In a letter to Dr. A. K. Fisher, of the Biological Survey, Inspector Bayer gives the following account of Silver Tip and his end:

"While reports came in occasionally of a large silver tip that was doing a lot of killing in the vicinity of Dubois, no authentic report was received until the spring of 1918, when several cattlemen asked that we send a man after the bear. A hunter was sent up there and reported killing the bear that summer, but investigation proved that the bear most wanted was still at large. He was particularly destructive that summer, not only killing cattle, but destroying camps and fire boxes belonging to the Forest Service and wrecking anything that he happened to encounter.

"A second hunter was sent up there in the spring of 1919. He, too, worked to get the bear, but without success.

"Hunter Rowley was then recommended to us as a bear hunter, and we put him on the trail of the grizzly in the spring of 1920. For a long time he was unable to find any fresh sign of the bear, or to find any cattle freshly killed by him. About July 15, this summer, he came upon a cow that had been killed a short time before by the bear, and he took up the trail.

"He kept after him until he got him, the fore part of September. During the six weeks that he followed the bear, he found 15 head of 2 and 3 year old cattle that the bear had killed, belonging to the Double Diamond outfit, near Dubois.

"All these cattle were killed by a crushing blow beneath the eyes; from the bear's open paw. In most cases the cattle were not eaten upon, except where the bear had taken out the liver and eaten that.

"The trap that finally got the bear was a No. 6, and was set about August 15. The clog used was a log 24 feet long and 5 inches through.

"The clog was broken off about 50 yards from where the trap was set, and the bear carried away 7 feet of it, and had this fastened to him when he was found. He was found 8 miles from where he got into the trap.

A Trail of Destruction.

"In trailing through the timber many trees 6 and 7 inches through had been uprooted, and in several places the bear got into windfalls and tore out the down logs, almost making a road behind him in doing so.

"He was dead when Mr. Rowley found him, and had been dead too long to permit of taking his skin. Mr. Rowley said the bear would weigh about 1,000 pounds, the front feet would measure about 8½ inches across, and the hind foot about 12 inches in length.

"The fact that other hunters were after the grizzly to get the $100 bounty made Mr. Rowley's work harder."

GIVE EXTENSION AGENT REAL EVIDENCES OF APPRECIATION

One of North Carolina's county boards of education was in session and the district home demonstration agent was making an appeal for funds to give the local home demonstration agent a living wage and enough more to buy a car so she could cover her territory more efficiently. Getting money from county boards is not the easiest thing in the world, and the district agent was beginning to fear that her arguments were not making much of an impression, when a farmer in a side seat rose and said:

"Just to show you how much we believe in home demonstration work, I will tell you that my wife and I have offered the home demonstration agent of this county a furnished room in our home and her board free of charge just to get the benefit of a few suggestions from her from time to time. You know that I am not a rich man, and if the home demonstration work means that much to me, it must mean a good deal to the other folks of this county, too."

It did not take the board long after that speech to decide that they could not afford to lose the services of the extension worker. They voted an appropriation large enough to give her a substantial increase in salary and to buy a car.

When the agent heard the good news, she went down to a local agency to place her order for a car. A big, gruff salesman told her there were just 136 orders ahead of hers and that she might expect her car in about 18 months.

Looking and feeling much disappointed, she started for the door, but before she reached it the salesman called her back. "It isn't business, but you nursed us when we had the 'flu' last winter, so you can plan on having the first car that comes in."

CLUB GIRL'S WORK RESULTS IN BUILDING FAMILY HOME

Three years ago Irene Garner, of Madison County, Ala., joined a girls' gardening and canning club. Each year since she has cleared a good profit on her work. She gave this to her parents on condition that they build themselves a new home as soon as possible. The time before they decided on the step seemed long to the little club girl, but meanwhile she kept industriously at the club work and followed her leader's instructions. Soon the results of her efforts became apparent in the home. Then she persuaded her father to take up newer lines of development on his farm, and last year he built the modern, attractive country home which had been promised her.

Irene learned from her club leader how to finish floors and woodwork and how to paper a wall. Then she and a small brother put the lessons into practice, and the whole interior of the house was finished by their efforts.

Her own room she furnished with a quaint old suite of furniture which she made over. The rag rug on the floor she made herself as well as the curtains at the window. Little money was expended, but much taste and ingenuity were put into the room.

Besides being an expert gardener and canner, this Madison County girl can embroider and sew, can cook nicely, and serve a properly balanced meal. Last but not least, she finds time to be a leader of her community in all social affairs.

SECRETARY TELLS BANKERS OF THEIR DUTY TO FARMERS

(Continued from page 2.)

a great many tons of poor material which, if used, not only would fail to control the boll weevil, but would also burn the plants. Applications of such material would have resulted in direct damage to the cotton crop and indirectly would have had a deterring effect on the willingness of farmers to follow the department's advice with reference to the control of the weevil.

"Does it mean anything to the bankers of America that the department has been able to accomplish these results? Have they not increased the deposits in your banks and aided in building up the business of your communities? Isn't an institution of this sort worth supporting? It seems to me that in their own interest, if for no other reason, bankers generally should give their whole-hearted cooperation and support to the Department of Agriculture and to see to it that it is provided with the necessary funds and facilities for the prosecution of its work. It has been seriously handicapped by the action of the last Congress in reducing its appropriations for the current year by $2,000,000 below the amount available last year and $6,000,000 below its estimated needs. It has been compelled, as a result, to curtail or abandon entirely many vital projects, notwithstanding the fact that it is more essential than ever that everything feasible be done to aid in the solution of the difficult and complex problems in the field of agriculture.

Reduced Funds Hamper Work.

"I can not indicate here all the lines of work affected by the reduction in funds, but I will give you a few typical examples:

"We have been compelled to abandon the hog-cholera eradication work so far as the department is concerned, in several States, reducing from 140 to about 54 the force of trained veterinarians in the field showing farmers how to save their hogs from cholera. We have been compelled to withdraw from financial support of cooperative cow-testing association work in 10 States. Many field stations engaged in investigations looking to the development of better varieties of cereal crops and to the working out of methods for controlling diseases affecting them have been closed. Stations at which problems in irrigation agriculture are studied have been abandoned at three places. The work relating to the control of insect pests has been curtailed, and the scope of the market-news services conducted by the Bureau of Markets has been considerably reduced. These few instances out of a great many will, I hope, give you some indication of the situation that has confronted the department because of the lack of adequate provision for the prosecution of its activities. Surely this is poor business, or poor 'economy,' as it was termed. Certainly it affects the communities from which each of you comes and has a direct influence on your business.

"One of the most serious problems before the department to-day is that of securing and retaining an adequate personnel. The turnover, especially among the scientific workers, has reached an alarming stage and something must be done without delay to correct this deplorable situation. Otherwise we are threatened with a serious disintegration of the service with a consequent lowering of efficiency. Every banker, every business man, every citizen of the country, should take an active interest in this matter and should see to it that the department is enabled to establish salary standards and provide opportunities that will attract and hold the ablest and most far-seeing scientific men in America. The present scale of salaries would appear to you, I am sure, as little short of ridiculous. Compared with salaries paid for similar work in the business world, they are wholly inadequate.

Hard to Keep Trained Workers.

"It is essential that the department should be in position to retain its scientific workers over long periods, because, from the standpoint of public service, a man once embarked upon an important line of investigation, if he is capable and efficient, should remain there for the rest of his active career. At the same time, however, the Government should adequately compensate him for his efforts. When a man who has been working on a particular problem leaves the department he carries with him much of the information which he has secured in the progress of his work and which enriches him in experience, but which can not possibly be put on record. This means, of course, that a new man continuing the problem must, in many instances, go over a considerable part of the field already covered before he reaches the point where his predecessor left off.

"The turnover among all classes of employees in the department has approached, if it has not passed, 50 per cent. No business institution in America would permit such a situation to exist for any length of time. I could tell you of hundreds of men who have resigned to accept salaries ranging from two to five times greater than their salaries in the department; and I could tell you also of hundreds of others who are staying with their work because they love it, in spite of the fact that commercial concerns are offering them greatly increased compensation. I recall particularly the case of one man whose duties in the department brought him in contact with some of the best business minds in America. We paid that man just about one-fifth the salary that he is now receiving from a commercial concern. A specialist in cotton classing, receiving $3,000 from the department, resigned to accept $10,000. An engineer in the Bureau of Public Roads, to whom we paid only $2,500, is now receiving $5,000 from a single county in Texas. I could expand the list indefinitely, but I will not do so now.

Many Bankers Help Farmers.

"It is not to be hoped, of course, that the department can ever meet commercial competition for its workers, and, in fact, they do not expect it. As a general rule, they do not feel that the department should pay them as large salaries as they could secure in private employment, but they do feel that they should receive compensation sufficient to enable them to keep themselves and their families in reasonable comfort. Unless Congress grants permission to pay increased compensation the department will continue to be drained of many of its most efficient workers and a serious—almost fatal—blow will have been struck at the root of agricultural progress. Much of what is done by the Department of Agriculture, by the agricultural colleges in the various States, and by the agricultural extension agencies of every kind rests, in the final analysis, on the results obtained by the research workers. Should we permit such a situation—this deplorable dissipation of talent—to continue? Will it not have far-reaching consequences to industry and commerce unless it is remedied and remedied promptly? It is unbelievable that bankers and business men generally will fail to see how their interests lie in this matter, and I am convinced that, when they know the facts, they will see to it that the Department of Agriculture receives adequate financial support, that it is placed in position to pay reasonable compensation to its earnest and efficient workers, and that they are otherwise equipped to render effective service to the farmers of America and thereby to the Nation as a whole.

"Bankers, as I said at the outset, have done many things to encourage agriculture. The entire commercial cantaloupe industry of America, for example, was inaugurated by the bankers and business

men of Rocky Ford, Colo. The town was settling down into a rut of mediocrity, but in a few years it doubled in population and increased wonderfully in prosperity. Good hotels, fine stores, and paved streets replaced the ramshackle condition of the town, and the Arkansas Valley for a hundred miles took on a prosperity which has since been communicated to many other and still larger areas. The cantaloupe industry has entirely outgrown its small beginnings, and the bankers who nourished it in its infancy have received in increased business many times more than the sums they advanced.

"I could take up the entire time which I have at my disposal in recounting the many activities of the bankers in financing all sorts of farming operations—irrigation projects, drainage ditches, sugar-beet factories, canning industries, creameries, packing plants, cheese factories, boys' and girls' club work—a thousand things that have helped to develop agriculture and to increase community prosperity. In individual cases they have gone outside their regular field and have provided general bureaus of information for their constituents. More generally, however, they have limited their assistance to agriculture to cases where extension of credit was more or less directly involved. Many a community owes its improvement in breeds of swine, dairy and beef cattle, sheep, and other domestic animals to the active interest and effective help of the local banker. The introduction of soil-building forage crops, which have added not only to the immediate profits of the farmer but have laid the foundation for even greater prosperity in years to come; encouragement in the keeping of farm accounts; the development of diversified farming—in all of these things the banker has given valuable aid. He has been farseeing enough to know that this kind of assistance extended to the farm is profitable to the bank. It is apparent to the thinking banker that diversification of crops makes loans more certain, because if the main crop fails the farmer can subsist on the returns from other crops and perhaps repay a part of his loan instead of being obliged to rely upon additional loans for his maintenance and the renewal of his farming operations next season.

Bankers Have Many Opportunities.

"But for every score of opportunities thus availed of there are a hundred others knocking at the grated windows of American bankers. Apparently well-founded complaints have reached the department from farmers who have been denied credit for essential productive purposes while the producers of expensive luxuries and the dealers in them have been accommodated. I do not intend to imply that these bankers have maliciously chosen to handicap agriculture by the refusal of credit which they might have extended, but rather that they have yielded to the temptation of a larger immediate income from loans for less fundamental purposes. It is more than probable, however, that the bankers who have followed a shortsighted policy in such matters will, in the long run, be the losers.

Needed Aid Not Rendered.

"Other complaints have reached the department to the effect that cooperative enterprises among farmers which are saving to them and to the community, as well as to the Nation, considerable sums each year, have not only failed to receive the support they merit, but, in some cases, have met with the active opposition of certain local bankers. As an example may be cited one of the most successful forms of cooperation among farmers in the United States, that of mutual fire insurance. There are at present nearly 2,000 such companies with total outstanding risks aggregating six billions of dollars. This enormous volume of risks is carried at an average cost for the country as a whole of only 25 cents per $100 per year and, in individual cases, companies of this kind have furnished high-class protection to their members for half a century or more at a cost of less than 10 cents per hundred per year. Where these organizations have confined their operations to the writing of fire insurance upon segregated rural risks of limited values, they have, with surprisingly few exceptions, proved to be highly successful. Nevertheless, local bankers have, in individual instances, rejected the policies of such organizations as collateral in connection with loans, when the only apparent explanation has been the desire of a representative of the bank to write a new policy in some commercial organization at the customary rate of commission. It is hardly necessary for me to point out that any banker, who, because of an immediate commission to him, would discourage or undermine an organization which is saving the farmers of the locality thousands of dollars annually in reduced cost of insurance, brought about by cooperative effort, is not to be classed as a constructive banker.

"Four years ago there was enacted by Congress a law known as the Federal farm loan act, the fundamental purpose of which is to provide the farmer with farm-mortgage credit at a reasonable cost and on satisfactory terms of repayment, and thus to encourage land ownership by actual farmers and to decrease the percentage of tenancy. I do not need to impress upon you the importance of this measure and of the far-reaching influence of the system that has been developed under it. Unquestionably, it has been of immense benefit to farmers, but it is nevertheless true that the banking institutions of the United States are the largest single source of farm-mortgage credit. An investigation conducted by the department four years ago indicated not only that the banks held more farm mortgages than any other class of institutions in the country, but also that a considerable percentage of the farm mortgages held by other agencies, as well as by individuals, was placed by them. They are in position, therefore, through wise and sympathetic handling of their farm-mortgage business, to play an immensely important part in the task of insuring the continued cultivation of a large part of our agricultural area by actual owners.

"Speculation and reckless inflation of land values has been much in evidence during the last year or two, and unless this movement is checked it will result in conditions which are highly detrimental not only to the farming interests of the country but to our entire economic structure. If farm lands are permitted to attain speculative market prices in excess of their actual value based upon use and productivity, it becomes relatively impossible for the landless farmer to acquire a farm of his own. Furthermore, to the extent that renters purchase farms at prices which are disproportionate to their actual value, such purchases are almost certain to result in a large percentage of foreclosures. It is perhaps needless to point out that foreclosures, involving, as they do, the loss of all or a large part of the capital which hard-working citizens have accumulated by years of toil, will tend to aggravate social unrest and add strength to forces that are inimical to the orderly progress of society.

Bankers Administer Public Trust.

"Every banker should feel it his duty to see that the capital which he controls is directed into truly productive channels and into the hands of the most efficient users of such capital. The honest and efficient landless farmer should be aided in every possible way to purchase the land he tills, while speculation in land on the part of those who have no intention of using it should, in general, be discouraged. Nearly every transfer of a piece of land to a landless farmer involves a larger or smaller sum of mort-

gage credit which the local banker, in many cases, is in a position to furnish, either directly or as the agent or local adviser of other institutions or of individual investors. The opportunities and duties of rural bankers are especially large in this connection.

"In addition to mortgage credit, there is frequent need on the part of farmers for short-time or personal credit. In the case of the man who owns and has paid for his farm the supplying of such credit raises, as a rule, no serious problem. In the case of the renter, however, and of the young farmer who is just starting out as an owner, the question of short-time credit continues to be a difficult one. In such cases bankers should realize that personal credit can and should be based, to a considerable extent, upon character and productive ability. To deny such credit to the honest, ambitious, energetic farmer because he has little tangible security to offer is to lessen the productivity of available capital and to discourage the man who in the future should be a land-owning farmer.

Farmer Needs Capital.

"You are familiar with the fact that one of the principal factors which cause business failures is lack of sufficient working capital. This is as true of farming as it is of other lines of business. Capital is needed by a farmer when he buys land; when he improves it with fences, dwellings, barns, and other buildings; when he drains or irrigates it; when he buys live stock for breeding or feeding purposes; when he sets out an orchard; when he hires labor to cultivate and harvest his crops, or when he wishes to market them. These needs are legitimate needs and the farmer will naturally and rightfully look to his banker to finance his operations. Because of the splendid security the farmer has to offer, because the farmer himself is a good risk, because the success of farming depends upon a sufficient amount of working capital, and because successful farming—and in the definition of successful farming I include profitable farming—is essential to the prosperity of the whole community, it is incumbent upon bankers generally to give to individual farmers who apply for loans the same consideration and the same service which they would give to any other class of business men. This leads me to suggest to you a plan which is already in operation by many country banks and which enables them to keep in close touch with farmers, to understand their needs, to assist them in various ways, and, at the same time, to promote the business of the bank. This plan is the employment by their loan departments of a specialist trained in agriculture who will circulate over the county, get acquainted with farmers, attend their meetings, advocate improved methods of agriculture, and explain the banking business to them. Splendid results have been secured in this way by cultivating friendly relations with farmers, helping them intelligently in their problems and when they need financial accommodations, and encouraging them to build up a good bank account.

Cooperative Enterprises Important.

"What I have said regarding the financing of individual farmers applies with equal or greater force to the financing of groups of farmers and organizations of farmers. Farm organizations are developing rapidly in many communities, especially since the close of the war, generally for the purpose of collective buying of farm equipment, machinery, fertilizers, and other supplies, or for the marketing of farm products. These enterprises, when properly managed and financed, are likely to effect real economies in buying, marketing, and distribution through the pooling of orders and shipments and the adoption of improved methods of grading, storing, and handling, resulting in a better and more uniform product to the consumer. They are therefore entitled to every reasonable encouragement which Federal and State institutions can extend to them, and this obligation extends equally to the banks of the country. It is possible, and even probable, that some of these cooperative enterprises will be opposed by some business men who are financially interested in the storage, handling, marketing, and distribution of farm products. In such a situation it is not too much to expect that bankers will see to it that the farmers and their organizations have a square deal and an equal opportunity to obtain the financial assistance they need.

"After all the intricate problems of production are considered, the fact remains that marketing is the farmer's biggest and most difficult problem. He may follow the best system of scientific agriculture ever devised and still, for lack of the right kind of marketing facilities, make a failure. The Bureau of Markets, one of the 17 branches of the department, is devoting itself to everything pertaining to crops and live stock from the time they are produced until they reach the consumer. Its activities cover, as has been aptly said, 'the other half of agriculture.' Certainly its work is just as important, both to the farmer and to the consumer, as is the work of those bureaus having to do with improving and stimulating production, and it touches bankers even more closely. The bureau, for example, administers the United States warehouse act, the central purpose of which is to establish a form of warehouse receipt for cotton, grain, wool, tobacco, and flaxseed which will make such receipts easily and widely negotiable and therefore of definite assistance in financing crop movements. This purpose the act aims to attain by licensing and bonding warehouses under conditions which will insure the integrity of their receipts and make them reliable evidence of the condition, quality, quantity, and ownership of the products named which may be stored with them. It is probable that the bankers of the country could render no better service to agriculture than to make a thorough study of the act and cooperate with the bureau in inducing warehouses in every agricultural center to become licensed under its terms.

Crops Produced at High Cost.

"In connection with the matter of marketing, I wish to call your attention to some of the problems facing the farmers at the present time. In the spring of 1920, when they were planning their operations for the coming season, they were confronted with a very difficult situation. There was a shortage of farm labor estimated at 33 per cent, the cost of everything the farmers had to buy was exceedingly high, and there was uncertainty as to the future prices of farm products. All these things added to the hazard of the undertaking, but, nevertheless, the farmers did not hesitate. They realized the responsibility resting upon them to meet the food requirements of the Nation and, in spite of all the difficulties, they have succeeded in producing one of the largest harvests in the history of the country. The last report of the Bureau of Crop Estimates indicates that there is a prospect of a wheat crop exceeding the prewar average by about 25,000,000 bushels; a corn crop of 3,216,000,000 bushels, or 500,000,000 bushels more than the prewar average; oats, 1,402,000,000 bushels, or 286,000,000 better than the prewar average; barley in excess of, and rye more than double the prewar average; potatoes exceeding the five-year average; record-breaking rice and tobacco crops; hay exceeding the five-year average; cotton, grain sorghums, and apples better than last year, and record sugar-beet and sorghum sirup crops.

"The cost of producing the crops which are now being marketed was greater than ever before, and yet the farmers are confronted with the necessity of selling them on a fallen market. High prices ruled while they were bearing the expense of production, but prices began to fall when the crops had about matured and were ready to harvest. Taking all crops grown in the United States, the relative prices on March 1

were 22 per cent higher than on the same date last year; on April 1 they were 23 per cent higher; on May 1, 23 per cent; on June 1, 24 per cent; on July 1, 21 per cent; on August 1, they were the same as on August 1 a year ago; on September 1 they were 8 per cent lower than a year ago; and on October 1, 14 per cent lower.

"To state the matter another way, this is the situation: The farmers of the United States have produced this year 3,216,192,000 bushels of corn. At present prices they would receive for their crop approximately a billion dollars less than what it would bring on the basis of prices prevailing in October a year ago. The cotton crop this year amounts to about 12,000,000 bales. At existing prices it would lack more than a third of a billion dollars of bringing as much as it would have brought a year ago.

"Cotton seed which sold a year ago at $60 a ton was selling on September 1 for $20 a ton. The wool clip this year aggregates 259,307,000 pounds. At prices prevailing in September last year it would have brought $133,000,000, but this year, on the basis of current prices, it would bring only $73,000,000, a reduction of about $60,000,000. Taking all crops into consideration from present prices and tendencies, the farmers of the United States are facing a shrinkage of prices as compared with last year aggregating more than $2,500,000,000—nearly 17 per cent.

Farmer Must Receive Fair Prices.

"Under existing conditions farmers have no assurance of receiving adequate prices for their products. They are many times obliged to sell when prices are lowest, while the consumer pays the prices prevailing at other periods of the year. A large proportion of each year's staple crops must be carried along during the year and put on sale as there is an effective consumption demand. No one questions that fact. The only point at issue is: Shall the farmer whose primary interests are involved be afforded such credit by local banks as will enable him to market his crops in orderly fashion? The American people must see to it that farmers secure credit sufficient for their needs. Only thus can they continue to supply the Nation's demand for food.

"I think you gentlemen fully realize that if the farmer is to continue to produce and to meet the food requirements of the Nation he must receive adequate prices for his products—prices which will enable him to provide a satisfactory standard of living for himself and for his family. The farmer is not the only one who will be adversely affected if he fails to secure a reasonable return for his efforts. He will suffer, of course, if he stops producing, but the banker, the manufacturer, the merchant will suffer also. Every banker, every business man in America is or should be interested in keeping the farmer on the farm and in having the farm operated to its reasonable capacity, turning as much as possible into the channels of trade, manufacture, and transportation, and this means that they must see to it that the farmer gets fair treatment in disposing of his products.

Demands the Best Thought.

"Isn't the present situation one which demands the best thought and sympathetic consideration of the bankers of America, and, in fact, of all the people of the country? Should they not address themselves earnestly to the task of aiding the farmers in their respective communities to tide over this difficult period and make their plans for next season's operations? I sincerely hope that the bankers will measure up to their responsibilities, both as citizens and as bankers, in this important matter; that you will discuss in your association meetings the problems involved; and that you will see to it that, so far as possible, the farmers are properly financed, not only to protect them from unwarranted losses but also to stabilize their business and to insure adequate food production in the future.

"I do not think you can fail to see that the farmers' problems are your problems, and that your ultimate prosperity depends upon a right solution of the difficulties confronting the farmer. You have an active and wide-awake agricultural commission—a commission which has rendered invaluable service in bringing about a better appreciation of agriculture on the part of bankers and other business men—but are the individual members of your association doing all they can to improve agriculture and to make sure that the farmers in their communities have free, open, and competitive facilities for marketing their products? Do you understand fully what a permanent profitable agriculture means to you, to your bank, to all business, and to the Nation? Have you sympathetically studied the farmers' credit needs and endeavored to meet them in every possible way? Do you fully realize the importance of encouraging cooperative associations for purchasing pure-bred sires? Do you know that we are milking in the United States millions of cows that do not pay their board, and that a cow-testing association would go a long way toward eliminating such cows from their communities and replacing them with productive animals that would tend to add to the farmers' income and bring deposits to the banks?

"Do you know as much as you should know about what the Department of Agriculture and agricultural colleges in the various States are doing for farm boys and girls? Did you ever hear of the boy who joined a club and whose father twice destroyed his record books, and how that boy kept at it, walked to the fair, and won first prize? Did you ever hear of the club boy whose father was dead and who had to help to support his mother and six brothers and sisters? That boy worked out 12 hours a day, but he found time to cultivate his club crop. He did not win a prize—he won nothing for himself—but he helped his school win an agricultural library. He tells his club leaders that his experience has impressed upon him the value of an education, and that in spite of home difficulties he is resolved to have an agricultural education so he can be more than an ordinary farmer.

Helping the Girls and Boys.

"Did you help finance either of those boys? Wouldn't you like to feel that you had had some part in showing one of these boys the way? They are only typical instances from one State. They could be multiplied hundreds of times in that State and in every other State. In your State, in your county, in your community, are other club boys and girls who are having just as hard a fight and who will accomplish just as much if they can find the help that they may need to tide them over some particularly rough place. I do not believe that there is in the United States any other organization so favorably situated as the Amercian Bankers' Association to make the rocky road somewhat smoother for these boys and girls who are the foundation of a permanent and indestructible prosperity. You have your national organization, your State organizations, your district and county units—you can reach them all. And there is no way by which you could write a better insurance policy for the prosperity of your bank through another generation than by doing just that thing.

"Take an active, not a passive, interest in agriculture and in the problems confronting the farmers in your respective communities. See that the great basic industry of the Nation is properly encouraged, supported, and developed. If a bill is pending in your legislature that is inimical to agriculture, it should have the spot light of publicity turned on it just as a vicious franchise bill would have. If the farmers are making an effort to secure some constructive legislation, it should be discussed in your meetings and in the daily press just as a meritorious public-service measure would be. You ought to see that these things are done, not alone because it is

a matter of even-handed justice, but because the prosperity of the Nation depends upon the agriculture of the country.

"I do not believe the editorial columns of our papers are devoted so largely to matters other than agriculture because of any lack of interest in agriculture, but rather because they are closer to business. The business men suggest and expect discussion of matters having to do with business. It is not unfair of them, and I am not suggesting any undue influence. I only wish to point out that many times the farmers are not in position to get their views fully before the public or effectively to protect their interests. Consider if, in your own communities, you can not well scan every bill, every proposal, every situation, with a view to learn whether agriculture would be affected adversely by it, and if so, discuss it in your meetings; or if it is a reasonable, just aid to agriculture, give it your support—otherwise it may not receive proper consideration. I hope, therefore, that when you go back home you will not let a single day pass without considering how you can help agriculture, the great underlying industry of America, the foundation upon which all else rests."

WOOD PRESERVATIVE OUTPUT IN U. S. MAKES LARGE GAIN

Investigation by the Forest Service of the United States Department of Agriculture shows that the use of wood preservative has increased to a large extent in the United States. Valuable work on wood preservation has been done at the Forest Products Laboratory of the department at Madison, Wis.

In 1919 there were 65,556,247 gallons of creosote, 2,412,592 gallons of paving oil, 102,011 gallons of miscellaneous preservatives used in the United States, in addition to 43,483,000 pounds of zinc chloride, the largest quantity of this preservative ever reported by the industry. Of the creosote, 6,493,000 gallons were imported.

Prior to 1917 the plants of this country depended upon foreign manufacturers for approximately 50 per cent of the creosote consumed. Most of this oil came from Germany and England. During the war, however, this supply was cut off, and the plants looked to domestic producers for their supply. Nearly all of the importations in 1919 were from England and Canada.

The material treated consisted of crossties, poles, wood blocks, crossarms, construction timbers, and miscellaneous material, largely for railroads, mines, and telegraph and telephone companies. The total amount of wood subjected to preservative treatment by the 108 plants that were active during 1919 was 139,878,584 cubic feet, or 17,265,699 more than the previous year. About 80 per cent of this wood consisted of railroad crossties.

CROPS AND LIVE STOCK BEST FOR SOUTH DAKOTA DRY LAND

That the high fluctuation of crop yields in South Dakota is due to its fluctuating rainfall and that cultural methods will not change the problem materially, is the substance of a recent report made by the United States Department of Agriculture, after 12 years of investigational work there. The work done at the experiment stations and the experience of farmers who have succeeded in the South Dakota dry-farming country indicate that the most favorable conditions for grain production are found when combined with or subordinated to stock production.

Attempts to make this section of South Dakota a strictly crop-producing region have been unsuccessful. The system of farming that offers the greatest possibility of a permanent agriculture for western South Dakota is one in which crop production alone can not be depended upon for a successful type of farming, as the cash crops, such as small grains, are subject to failure, and the margin of profit is low. The more certain crops, such as corn stover and sorghum, can not be grown with profit unless fed near where they are produced. Their bulky nature prevents long hauls, and their sale price is far below their feeding value. The production of live stock alone is likewise subject to limitations. The most prominent of these is the question of winter feed.

The system of farming for this section suggested by the United States Department of Agriculture is as follows: The production of live stock up to the limit of pasture in dry years; the planting of an acreage of corn sufficient to meet the winter demands of the stock to be carried over; and the production of small grain on the corn land. In years of extra heavy production, a sufficient quantity of the excess food produced should be covered over in silos or stocks to meet the needs of less favorable years, which are sure to come, when insufficient supplies will be produced.

Campaigns Increase Use of Milk in Cities—Work Among School Children Successful

Milk consumption was increased 30 per cent in a recent milk campaign put on in Spokane, Wash., by the State Agricultural College and the Spokane Farm Bureau. The work was supported by almost every civic organization, with the assistance of representatives from the Dairy Division of the United States Department of Agriculture.

Children Aid in Work.

During the week of the campaign 27,911 children heard talks on the value of milk in the diet of the child, and a large number of these children helped personally in various ways to make the campaign a success. The fifth, sixth, seventh, and eighth grades in the city schools made clever milk posters. The primary grades put on a play, The Milk Fairies, and all the children in the graded schools wrote essays on "Milk is a perfect food." A survey made before the campaign showed that milk did not enter into the regular diet of 4,770 children in the Spokane schools, or 17 per cent of the whole, and that 8,846, or 31.7 per cent, drank tea and coffee regularly.

Milk campaigns by the State agricultural colleges, together with the farm bureaus and other local organizations, in which the United States Department of Agriculture has cooperated, have been held in many cities during the past 12 months. The increased consumption of milk following these campaigns has varied in the different cities. In Kansas City the increase was 14.7 per cent, in Topeka 25 per cent, in Seattle 9 per cent, in Pittsburgh 24 per cent, in Detroit 10 per cent, in Tacoma, Wash., 30 per cent, in Davenport, Iowa, 15 per cent, and in Clinton, Iowa, 15 per cent. The basis for the computation of these percentage increases is a comparison of the month immediately following the campaign with the corresponding month in the previous year. The amount of butter used in the cities after a campaign has increased from 15 to 79 per cent.

In every city a part of the work is to explain to the public how the milk supply is protected against contamination. Other features are the work with the schools and demonstrations in the use of milk by the children. That the work results in improved health on the part of the little ones is clearly brought out by the feeding demonstrations.

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DELEGATES FROM U. S. ATTEND AGRICULTURE MEETING ABROAD

Marketing and Distribution of Food Crops and Live Stock Studied.

First Meeting of General Assembly of International Institute of Agriculture Held Since 1913—Leon M. Estabrook, of Department, Among Delegates.

Three of the delegates from the United States to the general assembly of the International Institute of Agriculture at Rome, November 3-15, are Dr. Thomas F. Hunt, dean of the college of agriculture of the University of California, permanent delegate; Leon M. Estabrook, statistician and chief of the Bureau of Crop Estimates of the United States Department of Agriculture, and Harvey J. Sconce, of "Fairview," Sidell, Ill., former president of the Illinois Agricultural Association and prominent in organizing the American Farm Bureau Federation.

Because of failure of Congress to provide a specific appropriation for the payment of the expenses of the American representatives, it was necessary to delegate men who would be in Europe at the time on other business or who were willing to pay their own expenses. Dean Hunt, who was appointed permanent delegate to succeed David Lubin, is in Europe on sabbatical leave from the university, and reached Rome in time to take part in the meeting.

Founded on Lubin's Idea.

The International Institute of Agriculture was organized in 1905, through the assistance of King Victor Emmanuel III, at the instance of the late David Lubin, of California, who had first tried to interest several other countries in the project. Mr. Lubin conceived the idea of an international clearing house for crop and live-stock statistics which would make available systematically, on the same dates for the entire world, information regarding the production, consumption, marketing, and distribution of agricultural commodities. He was the permanent delegate of the United States to the institute from the time of its organization until his death in 1919.

The institute has a direct interest to American farmers, because the prices of American products are determined, to a considerable extent, by the relation between supply and demand which is world-wide in its application. The price of bread and meat in this country is influenced to a considerable extent by the surplus or deficient production of bread grains and meat animals in many foreign countries as well as at home.

Mr. Estabrook, who is thoroughly familiar with the crop and live-stock statistical service of the United States, and deeply interested in the marketing and distribution of American farm products, is being sent to western Europe by the United States Department of Agriculture to collect information on the present and prospective supply, marketing, and distribution of agricultural products, especially cotton, wool, hides, and skins. The American representatives will pay particular attention to the marketing and distribution, surplus, carry-over, etc., of food crops, fiber crops, and live-stock.

Meets Every Two Years.

The general assembly meets every two years to review the work of the institute and to outline plans for the succeeding two years. The last meeting was held in May, 1913, the war having interrupted

(*Continued on page 7.*)

THE TOLL OF PLANT DISEASES.

Here are some of the losses to American farmers in the United States in one year by plant diseases which might have been prevented if known control measures had been immediately applied: Wheat, 112,000,000 bushels; oats, 50,000,000 bushels; corn, 80,000,000 bushels; potatoes, 50,000,000 bushels; sweet potatoes, 40,000,000 bushels (two-fifths of the total crop; tomatoes, 185,000 tons; cotton, 850,000 bales; peaches, 5,000,000 bushels; apples, 16,000,000 bushels. The figures were compiled for the year 1919 by the Plant Disease Survey of the Bureau of Plant Industry, United States Department of Agriculture.

GREATER NEED OF PROTECTING BALED COTTON FROM WEATHER

Tests Determine Extent of Destruction Suffered Under Various Conditions.

Properly Constructed, Efficiently Operated, Bonded Warehouses Found to Afford Best Conditions for Holding Cotton Until Marketed—Increases Credit.

A series of experiments to determine the extent to which, under various conditions, baled cotton is destroyed by weather was recently conducted by the Bureau of Markets, United States Department of Agriculture, at Jefferson, Ga. The results are striking. In one instance, a bale of cotton placed out in the open, flat on the ground with no covering, was damaged to the extent of 370 pounds at the end of eight months. Another bale, placed on edge, with no further attention, lost 167 pounds. A bale on edge and turned over once a week, lost 110 pounds. A bale placed on end and not turned lost 78 pounds. A bale placed on timbers off the ground and turned once a week lost 49 pounds, and a bale placed on timbers and covered with tarpaulin lost but 14 pounds. A warehoused bale of cotton during the same period lost only 1 pound. Other tests have been conducted from time to time that corroborate these results and prove that the ideal conditions under which cotton may be held by growers before marketing are afforded by properly constructed, efficiently operated, bonded warehouses.

Need for Protection Greater.

With an enormous over-supply of low-grade cotton in the South at the present time, the necessity for protecting the crop from weather, fire, and other loss is greater than ever before, say specialists of the Bureau of Markets. The potential weather damage and other risks to which exposed cotton is subject increase in direct proportion as the time that cotton remains in the hands of the growers lengthens, and if the cotton growers are not to lose millions of dollars every safe-

guard against hazard of loss must be employed. In the matter of weather damage alone it has been estimated that in normal times $70,000,000 worth of baled cotton is lost annually as a result of permitting cotton to remain exposed to the elements months at a time without covering or attention of any kind.

When it is considered that in many instances the total cost of warehousing cotton, including insurance, is no greater than the fire-insurance rate alone on exposed cotton, it would appear to be the utmost folly for a grower not to spend his money to the greater advantage, say the bureau's specialists. The insurance rate on exposed cotton is about $4 a hundred per annum. Every $100 worth of cotton stored in a properly constructed and protected warehouse can be insured for 25 cents per annum. The differential of $3.75 would in many cases pay all other warehouse charges.

Of 50 bales of cotton that a cotton grower of Maysville, Ga., sold to a local buyer a short time ago, 65 pounds in each bale was found to have been destroyed because of exposure to the weather. At 30 cents a pound the grower lost nearly $1,000. If this grower insured his exposed cotton it cost him at the rate of $300 a year for fire insurance alone. He neither had protection from weather damage or theft nor was he in a favorable position to negotiate a loan upon his product. To have secured these advantages would have cost him at the maximum but little more than the cost of the fire insurance alone. By diverting his investment into a channel that would have given him the fullest value for his money, he would have saved the $1,000 that he lost through neglecting his product.

Growers Depend Upon Banks.

From a financial viewpoint, ability to make loans upon his crop is of paramount importance to the cotton grower. Almost all cotton growers must depend upon the banks to finance them. No banker is anxious to lend money for even a short period on cotton inadequately protected; he emphatically will not do so under such conditions on long-term loans. To be able to furnish gilt-edged security to the banks for loans it is necessary not only to warehouse cotton but to select a warehouse whose receipts are readily acceptable as collateral.

The governor of the Federal Reserve bank of Dallas, Tex., recently declared that, with the present wool, grain, and cotton situation in that district, the question of adequate, licensed warehouses and the vital necessity for valid and binding negotiable receipts for all warehoused commodities are of prime importance to banking and business interests. It was further stated that nonnegotiable warehouse receipts, or receipts that do not carry with them the title to the stored goods, would not be accepted as security to notes offered for rediscount, and that therefore it was important that the banks immediately take up with local warehousemen the matter of arranging for the issuance of negotiable receipts in approved form. The bank has suggested the use of receipts after the form approved by the Federal Bureau of Markets under the provisions of the United States warehouse act.

Redoubled Efforts Against Cattle Tick, Gov. Russell, of Miss., Asks of Workers

An appeal for full performance of duty in eradicating the cattle tick in Mississippi was recently sent by Gov. Lee M. Russell to all Federal, State, and county employees engaged in the work there. Officials of the United States Department of Agriculture engaged in tick eradication say that "if the governors of every State in which tick eradication is being conducted would take a personal interest in the work and so express themselves by letter or through the press it would be a very great assistance to the department in its cooperation with the States, and would no doubt greatly facilitate the completion of that important undertaking."

Prejudice Rapidly Disappearing.

Gov. Russell's letter was as follows:

"I want to congratulate the people of Mississippi upon the rapid strides they have made in the handling of the cattle tick. In the years gone by much harmful prejudice in the minds of some of our citizens has retarded the movement on the part of the State and National Government in forever eradicating the greatest enemy to the cattle industry in the South—the cattle tick. This prejudice, carelessness, and lack of information about the ravages of the tick is fast passing away, and now there are but a few communities in the entire State that are still infested with this pest. There can be but two causes for this condition: First, failure of the people to see and realize the great value to themselves in the eradication of the tick, and, as a result, the failure to cooperate together for their own good; second, the employment of incompetent and unreliable inspectors. This latter cause has brought about more dissatisfaction and trouble than possibly any other one cause in the whole work. It is hard to conceive how a man employed in this or any other public service has the audacity to draw his money when he has performed little or no service; yet this is the case in many instances. These incompetent and negligent inspectors have either sat down and done nothing or else they have played favorites and committed every sort of serious blunder to make the people have an utter disregard for the law. There may be added a third cause, and that is that incompetent and negligent supervisors have squandered the people's money by paying worthless inspectors without fully realizing the very great importance of this work—work that means millions to the farmers of this State.

"Therefore, with a sincere desire to see this State placed in the forefront of the cattle-growing industry in this Nation, I am sending to each dipping inspector in this State and other citizens in tick-infested areas this most urgent appeal, asking each to do and perform his full duty in this behalf. The citizens in many places have not been treated fairly because of negligent and incompetent inspectors, and because the supervisors fail to do their duty, and, too, in some counties, the supervisors have done their best, but the people flatly refuse to cooperate. I am making this call to all parties concerned, but to the inspectors particularly, that they either conform to the law in full, whole-heartedly, earnestly, and intelligently, or get off the job and let the people have a man who will do his duty. I want each supervisor also to do his full duty. The earnest cooperation of each of you is very much desired. All of the fair-minded taxpayers will appreciate your efforts, and with but a little cooperation, common sense, and earnest work we will be able to place the entire State tick free.

Asks for Answer to Appeal.

"Please let me have an immediate answer to this appeal. This is not directed to any one man, but is an appeal direct to every man alike, and is made with a hope that by proper compliance and cooperation the greatest work of one of the greatest and most progressive steps ever taken may be completed in a very short time."

Issues Judgment in Oats-Adulteration Case—Inspectors Watchful for Similar Violations

The Armour Grain Co. of Chicago entered plea of guilty to the charge under the Federal food and drugs act of adulterating and misbranding 28 carloads of oats, and were fined $1,050 and costs by the court, according to a notice of judgment recently issued by the United States Department of Agriculture.

It was alleged in the information filed in the case that the oats were adulterated with feed barley, dirt, and chaff. Examination of samples taken from the cars by specialists of the Bureau of Chemistry showed that the added barley ranged from 5 to 18 per cent, the average found in all the samples examined being more than 10 per cent. The barley added to the oats was the so-called feed barley, which is the grain remaining after the elimination of the sound, heavy grain used exclusively for malting purposes, and contains, in addition to barley seeds, material amounts of weed seeds, screenings, and chaff.

Campaign Began Six Years Ago.

The publication of the notice of judgment in the Armour Grain case terminates, in so far as these particular shipments are concerned, a campaign that was begun nearly six years ago to stop the rather prevalent practice of adulterating oats and other feed grains with cheaper grains and screenings. As long ago as December, 1914, and January, 1915, 28 carloads of oats shipped by the Armour Grain Co. from Illinois to Maryland were seized in Baltimore by order of the court on information furnished by inspectors of the Department of Agriculture. The court issued a decree of condemnation and forfeiture and it was ordered that the oats be destroyed or released on bond.

Upon the proper execution of a bond to the amount of $23,600 that the oats would not be disposed of in violation of the law, the cars were released. In addition to seizing the cars and requiring the oats and barley to be sold for what they were, the Government entered a criminal prosecution against the Armour Grain Co. for violating the food and drugs act. The United States district attorney filed an information in the Federal court in Chicago in March, 1917. On May 29, 1920, a plea of guilty was entered on behalf of the defendant company and the court imposed a fine of $1,050 and costs.

An investigation made by the inspectors under the food and drugs act showed that a number of dealers were adding from 5 to 15 per cent of feed barley to oats. It was claimed by some dealers that the barley was grown with the oats in the field and that none was added after the grain left the field. At one elevator where this claim was made it was found that during a period of one month, during which every shipment of both incoming and outgoing grain was examined, in no instance did the oats as received contain more than 2 per cent of foreign grains, while the outgoing shipments contained from 5 to 15 per cent of foreign grains, principally feed barley. During the same month this elevator received more than 50 cars of feed barley.

Barley Feed Had Been Added.

In the Armour case it was admitted that barley feed had been added to the oats. The shipment into interstate or foreign commerce of oats to which any other grains or substances have been added constitutes a violation of the Federal food and drugs act. A mixture of oats and barley or of other grains may be sold provided it is so labeled as to indicate clearly of what the mixture is composed, but the sale as oats of such a mixture within the jurisdiction of the food and drugs act is prohibited.

Federal and State inspectors are on the lookout for adulterated and misbranded oats and other stock feeds. Action will be taken, say the food officials, in all cases found to be in violation of the law. The facts in the case against the Armour Grain Co. are published in Notice of Judgment 7692, recently issued. A copy can be obtained upon application to the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

URGE PREVENTIVE MEASURES AGAINST "PAINTBRUSHES"

Preventive measures against hawkweeds, or paintbrushes, should be taken at the first appearance of the plants in a field. All plants found should be destroyed immediately, the location marked, and frequent inspections made to guard against the weed's reappearance, say specialists of the Bureau of Plant Industry of the United States Department of Agriculture in Department Circular 130, which discusses the characteristics of the various kinds of hawkweeds and means for the plant's eradication. The most troublesome species of hawkweeds occurring in the United States are the orange hawkweed, which infests poor pasture lands throughout the New England States, and the yellow field hawkweed, a comparatively recent introduction from Europe which is troublesome particularly upon rich pasture lands in the highland sections of Virginia, West Virginia, and North Carolina.

Where the hawkweeds occur on poor pasture lands, it is sometimes questionable whether the expense of eradication is justifiable, particularly as these weeds frequently "run themselves out" in 5 to 8 years, according to the circular. It is often advisable to turn poor pasture land badly infested with hawkweeds into a farm woodlot, thereby deriving some revenue from the timber and avoiding the expense of eradication. In large infested areas where eradication methods are not attempted, hawkweeds should be mowed twice a year at the time when the flower heads first appear, usually in June and August. This prevents the maturing of seeds which are readily scattered by the wind to adjacent fields. Where complete eradication of the hawkweed is desired, the land may be placed under cultivation since the weed can not withstand the effects of cultivating an inter-tilled crop such as corn. The hawkweeds grow typically in patches. One of the best methods of eradicating such patches is to cover them with crude dry salt. At least 2 tons of salt per acre should be used.

Copies of the circulars may be had by addressing a request to the United States Department of Agriculture, Washington, D. C.

UTILIZING BLEMISHED FRUITS.

Porto Rican fruit growers have partially solved the question of disposal of blemished and other oranges and grapefruit not suitable for shipping by extracting and bottling the juice. The United States Department of Agriculture cooperated in developing commercial methods of bottling the juices, and they are now being placed on the market with assurances of success. Some work with marmalade is also in progress, and the profitable utilization of the waste products of the citrus industry appears to be quite possible.

Ice harvested from ponds on the farm saves many dollars a year to milk producers and provides the wherewithal for many home comforts. The United States Department of Agriculture, in Farmers' Bulletin 1078, which may be had upon request, tells how to build an ice house in the slack fall season and how to store ice economically and securely. One and a half tons of ice properly stored will serve to cool the milk from one cow for a year and leave some for family purposes.

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Harlan Smith, Chief

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

ADDITIONAL TOWNS INCLUDED IN CORN-BORER QUARANTINE

In accordance with an order signed by the Acting Secretary of Agriculture, the Federal quarantine against the European corn borer has been extended to include additional towns in Massachusetts, New Hampshire, and New York. In Massachusetts the towns are New Bedford, in Bristol County; Sherborn, in Middlesex; and West Bridgewater, in Plymouth County; New Hampshire—Portsmouth and Rye, in Rockingham County; New York—Knox, in Albany County; Arkwright, Portland, Villenova, and Westfield, in Chautauqua County; and Tonawanda, in Erie County.

This action by the Department of Agriculture supplements former quarantine orders against certain parts of Massachusetts, New Hampshire, New York, and Pennsylvania, to prevent interstate shipment of carriers of the corn borer. No restrictions are placed upon shipments from points in the quarantined States outside infested areas.

The articles specifically covered in the quarantine are corn and broom corn, including all parts of the stalk; celery, green beans in the pod, beets with tops, spinach, rhubarb, oat and rye straw as such or when used as packing; cut flowers or entire plants of chrysanthemum, aster, cosmos, zinnia, and hollyhock; and cut flowers or entire plants of gladiolus and dahlia except the bulbs without stems. The restrictions do not apply to shelled corn and clean seed of broom corn, or to other articles after they have been manufactured or processed in such way as to eliminate risk of carrying the corn borer.

All the articles covered may be moved interstate to points outside the infested area only after they have been inspected by the United States Department of Agriculture and certified to be free from the corn borer.

MODIFIES QUARANTINE ORDER GOVERNING COTTON SHIPMENTS

A modification of the existing quarantine against the pink bollworm in Louisiana and Texas, permitting cotton lint and linters produced prior to 1919 to be shipped to points outside the Cotton Belt without disinfection, was announced by the United States Department of Agriculture, effective November 1, 1920. As at present, permits will be required for the movement of such cotton.

The principal object of the new ruling is to permit the movement of Texas cotton under regulation through the port of New Orleans and to permit interstate movement to northern points for consumption of cotton lint and linters which have been in storage for such period as to preclude the possibility of their being the means of conveying the pink bollworm.

Due to lack of demand during the last two years for lint for domestic purposes, but primarily as a result of the practical closing of the export market against the movement of linters because of lack of demand and high freight rates, there have been considerable accumulations of linters at the oil mills in the regulated zones in Louisiana. This amendment will relieve the situation to a large extent by making it possible to market, without risk of spreading the pink bollworm, a large portion of these accumulated linters.

U. S. A NATION OF NIMRODS NOW HAS 7,000,000 HUNTERS

This is a Nation of Nimrods.

There are 7,000,000 hunters in the United States, according to the chief United States game warden in the Biological Survey, United States Department of Agriculture. This estimate was made from reports on the number of game licenses issued by the various States.

In 1919, 3,600,000 State licenses were issued, and in addition it is estimated that 3,500,000 hunters are exempted under various State provisions. The returns to the States from licenses was approximately $4,500,000, all of which was expended by the States in administration of State laws for the protection of game. This sum permits the employment of approximately 2,000 salaried State game wardens and 600 fee wardens. The congressional appropriation for Federal game-warden service for protection of migratory birds is $142,500, which permits the employment of only 29 salaried wardens.

At its recent meeting in Ottawa the International Association of Fish, Game, and Conservation Commissioners adopted a resolution calling for the issuance of Federal licenses for hunting migratory birds. The recommendation called for licenses in the form of special stamps to be issued by postmasters and attached to State licenses. It was estimated that the revenue from such licenses would amount to between $1,000,000 and $2,000,000, which could be used for the protection of game.

FIGHTING PEACH-TREE PEST WITH GAS SAVES MILLIONS

The results of what is known as the para-dichlorobenzene treatment for the eradication of the peach-tree borer lead experts of the United States Department of Agriculture to believe that a practical means has finally been found of ridding orchards of this disastrously destructive pest. Previously the only effective method of fighting the borer was by removing the soil around the base of the tree and digging the grubs out of their galleries with a knife. It is estimated that the borers have done $6,000,000 damage a year and that $2,000,000 a year has been spent in fighting them.

The para-dichlorobenzene method was first used extensively by orchardists in 1919. It consists in sprinkling fine crystals of the insecticide on the soil around the base of the infected tree and covering with earth to hold the gas. The substance is highly volatile and forms gas when the soil is between 74° and 80° F. This gas is five times heavier than air and sinks down through the soil. It is highly effective against the borer; and a pound of the insecticide, costing not more than 25 cents, is sufficient for 8 or 10 trees. The labor is scarcely one-third of that formerly required. The saving therefore is great.

This year the para-dichlorobenzene process has been used extensively in the Georgia peach belt, some localities buying as high as 50,000 pounds and large individual growers as high as 2 tons each. Growers declare that it is one of the greatest accomplishments in the history of the department, comparable to the self-boiled lime-sulphur treatment for control of brown rot and scab of the peach.

NO DUMPING OF FOOD PRODUCTS TO KEEP UP PRICES

By George Livingston, Chief, Bureau of Markets United States Department of Agriculture

The alleged "dumping" of perishable foods to keep up prices has always been a subject of popular misapprehension on the part of the general public. The Bureau of Markets has made many investigations of such rumors, but the only evidence of "dumping" that has ever been found is where products have been condemned by health authorities.

Found to Be Gossip.

The story was recently circulated that 80 carloads of potatoes had been willfully tossed into the Delaware River near Wilmington, Del. The bureau traced the statement to its only possible source and proved that it had absolutely no foundation in fact. One railroad man had informed another railroad employee that while in Jersey City, some time previous, he had heard the dumping of perishable food discussed (although he himself had never witnessed such dumpings during 15 years of railroad experience). The second railroader embellished the report for dramatic effect and relayed it to a third person. The third added a few details for local color and passed the canard to a fourth, the fourth to a fifth, and so on until it was stated as a positive fact that 80 carloads of potatoes had been dumped into the Delaware River. That fabrication has been read or heard by thousands of people, and ninety-nine in every hundred persons implicitly believe it.

The Baltimore & Ohio, the Philadelphia & Reading Railroad, and the Pennsylvania system are the only transportation lines in the vicinity of the scene of alleged dumping. Officials of these railroads characterized the story as a pernicious falsehood, and the officials of the Pennsylvania system, which handles the bulk of the potato shipments at Wilmington, proved that during the month prior to the report only 12 cars of potatoes had arrived over their lines for delivery to receivers in that city.

There is but one circumstance under which veracity can attach to any dumping allegation, and that is where a car of produce consigned to a commission man or buyer is refused and left to stand on the track to the point of deterioration. When the health authorities are informed of the presence of the decayed food they order it to be disposed of as a matter of protection of public health. Yet, for a commission man or buyer to pursue such tactics would immediately lay him open to accusation of fraud and his business career would be short lived, for certainly no producer would thereafter deal with him.

Not only have investigations of such allegations proved them to be without foundation in fact, but their absurdity is patent from the most elementary economic consideration of the matter. Dumping "to keep up prices" would be possible only where the entire supply of the product dumped was controlled by an individual or a few individuals. Fresh vegetables move into markets from hundreds and even thousands of owners and are handled by numerous dealers. Dumping by any one owner or dealer would subject him to immediate and considerable loss, and the slight price increase that might conceivably result under unusual conditions would benefit not the "dumper" but rather his competitors. With perishables moving as freely as they do in the United States, from all parts of the country, shipped to numerous dealers by thousands of owners unknown to one another, the possibility of a monopoly in a market of any size is practically out of the question.

Seeks Better Distribution.

The bureau feels that there are a number of just causes for criticism of the distribution practices of the country and is constantly endeavoring to secure their elimination, but where charges are made of conditions that can not possibly exist a great deal of harm is done and the efforts exerted to correct the wasteful practices seriously hampered. When the misapprehensions regarding marketing practices shall have been laid to rest along with the ghost of the "dumping" bugaboo, the cooperation necessary to reorganize the machinery of marketing better to meet our rapidly changing economic requirements will be given in largest measure. In most instances these misapprehensions will fade away into thin air with the application of some dispassionate and independent thinking.

CONTROL OF SPOTTED APPLE-TREE BORER.

The best friend of the apple grower—so far as warfare on spotted apple-tree borers is concerned—is the woodpecker. Specialists of the United States Department of Agriculture declare that if it were not for the woodpecker this pest would be more widely known and much more destructive. Control of the borer at present, however, is not a difficult matter, according to Department Bulletin No. 886, which contains a full discussion of the pest and the best means for keeping its destruction within bounds. Spraying apple orchards with arsenicals for the codling moth and other common insect pests kills many adult borers, it is said. While small, borers may be found and removed from the trees very readily by paring away the bark over their burrows with a sharp knife. Copies of the bulletin may be had upon request of the United States Department of Agriculture, Washington, D. C.

COOPERATIVE MILK PLANT PROVES SUCCESSFUL IN PA.

With the assistance of the Dairy Division of the United States Department of Agriculture, the dairymen in Dubois, Pa., are conducting a cooperative milk-distributing plant with decided success. As the owners are primarily producers and unfamiliar with the business of milk distribution, the Dairy Division keeps in touch with the work being done, and advises the stockholders in regard to the management of the business. Similar assistance is given to other organizations, whether cooperatively or privately owned, whenever requested.

The price which the farmers get for their product is determined by dividing the net receipts from sale of milk, after deduction for operating expenses and sinking fund, among the farmers in proportion to the amount and quality of milk they have respectively brought to the plant. Starting in July, 1917, with a business of only 800 quarts they are now handling over 2,000 quarts daily, and have been paying remarkably good prices to the members. The enhanced profits were not the result of high charges to consumers, but of economies brought about by cooperation, such as reducing the number of delivery wagons. The cooperation of producers in one concern has also enabled them better to handle the problems of surplus and shortage of milk. The supply has been kept adequate to the demand; and at the same time the quality has been more uniformly satisfactory than formerly.

Since last February the price allowed for any particular milk has been based on its butter-fat content. All milk is expected to have at least 3.25 per cent of fat, and for this milk the minimum price is paid. For every one-tenth of 1 per cent of fat above the 3.25 there is an additional allowance of 4 cents per hundredweight.

Tree Surgery Deserves Wider Recognition—Prompt Treatment Prevents Future Loss

At present tree-repair work has not received the recognition and approval from tree owners that it deserves. This may be due at times to unfavorable experiences with dishonest or ignorant tree surgeons, at other times to the reluctance of the owners to spend much money in preserving their trees, or from their ignorance of the benefits that may result when tree-repair work is properly done.

Educating the Public.

Reliable tree surgeons are doing much in a practical way to educate the public as to the benefits of tree-repair work. A few States have laws regulating tree-repair work on a commercial basis.

The United States Department of Agriculture invites correspondence concerning methods of tree-repair work and is prepared to advise for or against any particular method so far as experience and the results of experiments permit. Farmers' Bulletin 1178 on tree surgery will be sent free on application.

Tree owners are urged to remember that the necessity for tree-repair work 15 or 20 years hence may be reduced materially by promptly attending to the fresh injuries of to-day.

Most persons can, at least with a very little preliminary practice on the simpler types of work, undertake ordinary tree surgery provided they are familiar with the use of a gouge and mallet, a saw and a paint brush. A steady head and ability to climb will be necessary for work in the top of the tree.

A badly diseased or injured tree should be removed and replaced by a healthy one unless there is some very special reason for trying to preserve the tree.

Two axioms of tree-repair work that should be borne in mind constantly are: That prompt treatment of freshly made wounds is the surest and most economical method of preventing disease and decay in the future, and that all wounds made in tree surgery should be cleaned, sterilized and protected from infection just as thoroughly as in animal surgery, and for the same reasons.

QUALITY POULTRY ON STOCK FARMS.

A noticeable feature of the "Better Sires" campaign, conducted by the various States and the United States Department of Agriculture, is the excellent quality of poultry kept on general farms. Typical of this condition is a statement recently received from a farm in Platte County, Nebr. The principal live stock kept were Shorthorn cattle and Poland China swine. In addition the owner listed the following poultry, all of which was standard bred: 75 Barred Plymouth Rocks, 75 Black Langshans, 100 Brown Leghorns, 100 Rhode Island Reds, 3 White China geese, and 3 Pekin ducks. It was noteworthy that whereas the poultry was all of pure breeding, the swine herd included a number of grade females. The sires kept for all classes of stock were of pure breeding—a requirement for enrollment in the "Better Sires—Better Stock" campaign.

Move pullets into winter quarters before they begin to lay, the United States Department of Agriculture advises. All should be in winter quarters before cold weather. See that the henhouse is disinfected and that it is tight on three sides and that there is no chance for a draft to strike the hens while on their roosts.

ADVISES MEANS FOR USING TOMATO SEED NOW WASTED

That much valuable material is being wasted annually by throwing away tomato seeds extracted in pulping, soup, catsup, and canning plants is indicated by investigations made by the United States Department of Agriculture.

Department investigators have found that more than 1,000 tons of seed are thrown away annually in Northern tomato-pulping plants, with large enough output of seed to pay for shipping, and that they may be made into edible oil and stock food worth about $86,000 (December, 1919). Cost of collecting and preparing the seed is estimated at about $35,000, including all proper charges, and the cost of the necessary equipment is given at not to exceed $50,000.

In addition, the same plant, which would run not more than five months in the year, could be used for the handling of grape seeds and pumpkin seeds, which would distribute the overhead and cut down the cost of manufacture of the tomato-seed products.

By proper treatment tomato seeds may be made to yield two important commercial products—fixed oil, and press cake or meal. Two important steps are involved in preparing tomato seed for oil production—the separation of the seed from the wet waste and the drying of the seed. Effective processes have been worked out at the department's experimental farm at Arlington, Va.

Two methods of handling are recommended, one for the extraction of wet seed at the pulping plants and shipment to a few central drying plants; the other involves drying the seed at each pulping station. The freight charges in the first case would be about three times those entailed in the second case. The latter method is favored by specialists of the United States Department of Agriculture, who suggest that a cooperative plan of manufacture by an association of canners and packers, of which all tomato-pulping concerns are members, would perhaps be the most feasible method for the utilization of the waste, not only from tomatoes but from other products as well.

The utilization of agricultural waste of this character for the production of commodities of much commercial value is suggested as a conservation measure worthy of careful consideration.

FEEDING GARBAGE TO SWINE.

When properly managed, the feeding of garbage to swine is a practical means of pork production, according to Farmers' Bulletin 1133 issued by the United States Department of Agriculture.

In addition it helps to settle a problem which confronts many cities and towns—that of effective and economical garbage disposal. The wholesomeness of garbage depends greatly on the care it receives in households. Tin cans, glass, paper, oyster shells, saw dust, soap, and other foreign materials when mixed with garbage may cause numerous losses of hogs. But it has been found that this evil can be minimized by proper precaution and published requests to householders to be careful.

Immunizing of hogs is necessary to prevent hog cholera and frequent collection is urged to keep the feed fresh. Copies of the bulletin may be had free by applying to the United States Department of Agriculture.

Good kinds of green feeds for hens in winter, recommended by the United States Department of Agriculture, are sprouted oats, alfalfa meal, chopped alfalfa and clover hay, cabbages, and mangel beets. Cabbages may be hung up in the poultry house; the beets are usually split and stuck on a nail on the side wall of the pen about a foot above the floor to keep the feed clean. Keep oyster shells, grit, charcoal, and plenty of clean drinking water before the hens all the time.

First Honors in Junior Judging Contest Go to Missouri at National Dairy Show

In the second national boys' and girls' dairy-cattle judging contest, in which 15 teams from as many States competed for the junior judging honors, the Missouri team of three boys won first place in judging all breeds of dairy cattle, second place going to Illinois, and third to Texas. A Missouri boy, Arthur Gwinn, made the highest individual score for judging all breeds. Another Missouri boy, Arthur Bennett, was second, and Clarence Doran, of Illinois, was third.

The awards for the best team work in judging different breeds were as follows: Ayrshires, Missouri; Guernseys, Maryland; Holsteins, Illinois; Jerseys, Ohio. The contest was conducted at the National Dairy Show by the Boys' and Girls' Club Section, office of Extension Work North and West, States' Relations Service, and the Dairy Division, Bureau of Animal Industry, United States Department of Agriculture.

Spectators Much Impressed.

During the contest spectators were much impressed with the businesslike way in which these youthful stock judges went about their work of judging the eight rings of animals, consisting of a ring of cows and a ring of bulls of each of the following breeds: Ayreshire, Guernsey, Holstein, and Jersey. It was a big day's work, but well worth the effort, as all the contestants undoubtedly gained a broader knowledge of judging dairy cows through contact with excellent types of cattle, experienced judges, and through other educational features.

Among the 45 contestants were 2 girls. One of the girls, Helen Greenlee, of Ohio, furnished a surprise by taking first place in the judging of Jersey cattle, while Pearl Baker, of Michigan, won the bronze medal for judging Guernseys.

Contest Far-Reaching in Effect.

The judging work at the Dairy Show, while a great benefit to these boys and girls who took part in it, was only a small part of a far-reaching contest which, beginning in the local boys' and girls' clubs in many hundreds of communities, progressed to the contests for county supremacy, and then to the State championships, many of which were finally settled at the various State fairs. These State champion teams were the ones sent to compete for national honors at the dairy show.

In the contest last year only 6 individuals were entered, from as many States, while this year 15 States were represented with teams of 3 each. These 45 contestants were the guests of the National Dairy Association for five days, and were taken by the association on a tour of the packing and machinery plants, and on automobile tours of the city. On the day following the contest they participated in a banquet, where the awards were presented by representatives of the various donors.

DELEGATES FROM U. S. ATTEND AGRICULTURE MEETING ABROAD

(*Continued from page 1.*)

meetings since. The International Institute is maintained by contributions from 55 adherent countries, these contributions being proportionate to the part taken by each country in the activities of the institute. The United States and other countries of first rank contribute annually $16,000 for its support.

In addition to the crop and live-stock statistical service, the institute collects and publishes information with regard to trade in agricultural products and fertilizers, cooperation among farmers, wages, and conditions of farm labor, rail and water transportation rates, credit, finance, and exchange, and other economic factors affecting agriculture. In addition it issues a monthly review of progress in the science and practice of agriculture.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended October 30, 1920:

Feeding Garbage to Hogs. Farmers' Bulletin 1133.

Diseases of Apples in Storage. Farmers' Bulletin 1160.

Effect of Winter Rations on Pasture Gains of Yearling Steers. Department Bulletin No. 870.

Spotted Apple-Tree Borer. Department Bulletin No. 886.

Clover Stem-Borer as an Alfalfa Pest. (Professional Paper.) Department Bulletin No. 889.

The Beet Leaf-Beetle. (Professional Paper.) Department Bulletin No. 892.

Manual of Design and Installation of Forest Service Water Spray Dry Kiln. (Professional Paper.) Department Bulletin No. 894.

The Western Cabbage Flea-Beetle. (Professional Paper.) Department Bulletin No. 902.

The Hawkweeds, or Paintbrushes. Department Circular 130.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin No. 1133; Department Bulletin No. 870; Department Circular 130.

MAKING "BOTH ENDS OF PLANT WORK" SAVES MUCH TOBACCO

A saving of from $1,000,000 to $2,000,000 has been effected by tobacco growers of Granville County, N. C., this year by the adoption of a new method of harvesting combined with certain modifications in cultural methods worked out by specialists of the Bureau of Plant Industry of the United States Department of Agriculture. Other growers of the bright-tobacco district, of which Granville County is the center, are taking up the idea, and it is expected that before long the practice will become general there, increasing the yield of this type 25 or 30 per cent. This does not include the saving that results from the effect of the new method in keeping down destruction from leaf-spot disease—"wildfire."

The new method makes "both ends of the plant work." Instead of cutting the stalks, as has been the general practice in the "old belt" district, the leaves are picked from the stalk as fast as they ripen, working from the lower leaves upward. Under the old system the lower leaves would be allowed to remain on the stalk until the top ones were ripe, causing a loss of about 25 per cent through deterioration of the lower leaves, which make the best smoking tobacco.

Under the new method it is not necessary to "top" the plants so low, making the leaves less subject to "wildfire." The total amount of work is little more, and labor that otherwise could not be used is made available. Children from 10 years old up can be used for picking the leaves.

Muskrat hides, once worth about 36 cents, sold for $7.50 at the St. Louis fur auction last spring, the United States Department of Agriculture reports in a recent circular. Fur buyers say the supply of muskrat skins in the market is decreasing at the rate of 50 per cent a year.

Point Out Errors in Present Methods of Determining Quantity of Turpentine

In this country turpentine is sold almost exclusively by the United States gallon, which measures 231 cubic inches; in England it is sold by the hundredweight (112 pounds); and on the continent of Europe by the kilogram (2.2046 pounds), commonly known as the "kilo."

Turpentine shipped in tank cars is sometimes weighed and the gallonage calculated from the weight. In this case the commercial practice is to consider 7 pounds as a gallon. In most cases, however, this is incorrect, as only the very lightest turpentines at temperatures above 160° F. weigh as little as 7 pounds per gallon. The exact weight per gallon of any lot of turpentine at various temperatures can be calculated from tables compiled by the Bureau of Chemistry, United States Department of Agriculture, which can be had on request.

Basis of Payment.

If turpentine is purchased by volume, it should be paid for on the basis of the volume at the standard temperature of 60° F. This may be determined by adding to the gauged gallonage, when the temperature of the turpentine is below 60° F., or subtracting from the gauged gallonage, when the temperature of the turpentine is above 60° F. at time of gauging, a correction found by multiplying the gauged gallonage by the difference between the temperature of the turpentine when gauged and 60° F. and the product thus obtained by the factor 0.000525. If purchased by weight, it should be paid for at so much per pound or per 100 pounds.

In weighing a car of turpentine the stenciled weight of the empty car is usually accepted as correct. If a reliable railroad scale (known to be correct) is available, however, it is safer to weigh the car before and after loading, thus obtaining the true weight of the turpentine, as any error in the scale reading would appear in both the loaded and empty weight of the car. The weight of a railroad car as given in bills of lading is frequently incorrect by as much as 200 pounds, due to inaccuracy of scales, carelessness in weighing, or weighing cars which are wet or coupled to other cars not on the scales.

Two Errors Possible.

Obviously, then, the purchase of turpentine in tank-car lots, at so much per gallon, based on a preassumed weight per gallon (commonly 7 or 7.2 pounds per gallon), introduces possibilities of two important errors in judging the quantity of the contents, one due to inaccurate weighing on railroad scales, the other to the difference between the actual weight per gallon of the particular turpentine and the assumed weight. As a matter of fact, a pure turpentine which weighs as little as 7 pounds per gallon, equivalent to a specific gravity of approximately 0.841 at 15.5°/15.5° C., is never obtained from present sources of American turpentine.

PICTURES OF PIG "STARS" FOR SOUTH AMERICAN MOVIES

Motion pictures depicting the American swine industry and showing all important types of American swine are being prepared by the United States Department of Agriculture. The titles of the pictures will be produced in Spanish, as the film is intended for use in South America by a representative of the Bureau of Markets. South Americans have shown much interest recently in livestock breeding as it is practiced in the United States. Breeders of pure-bred live stock in this country have received numerous orders from South America, and it is expected that the exhibition of this film will increase the demand for our breeds of hogs. Visitors from South American countries have intimated that a film such as is being prepared would be well received in their countries and would be of great value in developing the South American swine industry.

WILL KEEP MAIN STATE ROADS CLEAR OF SNOW THIS WINTER

For two or three months each winter the northern State highways have been made impassable, or nearly so, by drifted snow, and the hundreds of millions of dollars invested in them bring no return to the taxpayers during the time the roads can not be used. With a view to remedying this condition, the Bureau of Public Roads of the United States Department of Agriculture has been making this summer a study of the situation with regard to snow removal in the States east of the Mississippi and north of the Potomac. An engineer of the bureau has conferred with the highway commissioners in the States in this territory, and reports that definite plans have been made in New Jersey, Pennsylvania, Michigan, Indiana, and Illinois which will result in the main trunk lines being kept open all winter. In some other States, notably in Ohio, snow removal is the duty of the counties, and while the State highway department is prepared to assist the counties in every way and is urging the necessity of the work, it is not empowered to initiate the work.

In some of the States snow fences will be placed for the winter 50 feet from the highway, to stop the snow before it reaches the road. These "fences," which are made of slats, are tipped backward until they form a decided angle and then are braced like billboards. In the spring the sections are unbolted from the stakes and stored by the State highway commissioner until winter. This type of fence has been used by many railroads in the past during the months of snow, and has proved very effective as a snow guard to the roadbed.

In other localities snow plows, either horse or motor drawn, will keep the State highways clear. One of the most efficient type of highway snow plow has a broad blade, which removes the snow, attached to the front of a motor truck. A second truck chained to the first pulls while the first pushes the blade.

MARKET FOR PORTO RICAN COFFEE.

The best market for Porto Rican coffee is still in Europe, though Cuba has taken increased amounts of the crop, especially the better grades that have heretofore gone to Europe. Little progress has been made in selling Porto Rican coffee in the United States, and in the opinion of a Department of Agriculture official in a report to the Secretary of Agriculture, progress is unlikely unless American coffee consumers change their tastes. Porto Rican coffee is an after-dinner coffee of the highest type, while the great bulk of the coffee consumed in the United States is drunk in large cups with cream and sugar, where a certain amount of aroma is the first requisite.

Life of cotton duck, used for protecting farm machinery, sacked grain, market fruits, field crops, etc., may be prolonged and the cloth made more serviceable by simple methods of waterproofing and mildew proofing worked out by the United States Department of Agriculture.

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Weekly News Letter

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CARE OF FARM IMPLEMENTS SAVES NEEDLESS REPAIR BILLS

Plow, the Basic Tillage Tool, Entitled to Proper Care When Not in Use.

Leaving Implements to the Mercy of the Weather Expensive Practice for the Farmer—Mower Needs to Be Put Under Shelter—Should Store Plow in Dry Place.

In this day of complicated machinery most farmers probably give little thought to the care of so simple an implement as a plow. But more effort has been expended in the slow process of developing this seemingly simple tool than in that of any other implement on the farm. It is the basic tillage tool, the fundamental farm implement, and it is richly entitled to be properly cared for when not in use.

Should Be Stored in Dry Place.

When laid by, say the implement experts, the plow should, if possible, be stored in a dry place, away from contact with the ground. In any case, the bright parts should always be coated with grease to prevent rust. Once the mold board and share have become pitted with rust, an efficient job of plowing can not be done until the corroded parts again have acquired a polish by use.

The United States Department of Agriculture, of course, does not stop with the plow in its admonition in this regard. Harrows, also relatively simple but tremendously important implements, are, next to plows, most generally neglected. Many farmers who would not neglect an expensive harvesting machine, say the experts, are careless as to harrows and other implements of this type. But these, also, represent capital invested, and a larger return is possible if they are properly cared for at the end of the season.

If harrows are stored under a shed, the teeth should be supported by blocks or boards, so that they will not become embedded in the ground. All accumulations of earth and trash should be removed. This is especially applicable to wooden-frame harrows. The earthly accumulations retain moisture and accelerate decay. When the wooden parts have dried out sufficiently they should be painted, to prevent season checking and splitting. As the harrow works in wet earth and close to the ground, deterioration is rapid once checking has started.

If the disk harrow is stored in a shed or other floorless building, the disk gangs should be run upon boards so the disks will not become embedded in the ground. Whether housed or not, the implement should be carefully cleaned of all accumulations of soil, and the disks should be greased with a heavy grease to prevent rust. The paint, particularly on the wooden parts, should be renewed frequently.

Get the Mower Under Shelter.

Mowers, more generally than plows and harrows, are put under shelter, but many of them spend the winter at the edge of the meadow where the last cutting of hay was made, and in most cases they are not properly greased, even when sheltered. Get the mower under shelter, if possible. In any case, clean the knife bar, wipe it with a greasy rag, and store in a dry place. Place a block of wood or

(Continued on page 5.)

ANXIOUS TO AID FARMERS.

Edwin T. Meredith, Secretary of Agriculture, recently sent the following message to E. D. Cohill, president of the Maryland Agricultural Society:

"I regret exceedingly that it has been impossible for me to accept Mr. Symond's invitation to attend meeting of Maryland Agricultural Society at Salisbury. Unfortunately, the situation here is such that I can not arrange to make the trip. Will you not be good enough to convey to the members of the Society my earnest good wishes and say to them that the various branches of the Department of Agriculture are anxious to cooperate with the farmers to the fullest extent in their efforts to meet the serious problems that agriculture is facing in these days of reconstruction."

FEW INSECT PESTS NATIVE; MANY BROUGHT FROM ABROAD

Introduced Pests Destroy $500,000,000 Worth of Cultivated Crops Yearly.

U. S. Department of Agriculture Seeks to Prevent Entry and Spread of These Destructive Insects—Public Should Aid by Strict Observance of Quarantine Rules.

In discovering America, Columbus not only opened up a vast new home for man but for insect pests of cultivated crops and domestic animals as well. Fully 100 of these foreigners have made their way to American shores, and incidentally to American gardens and fields, up to the present. They have multiplied so that to-day their destruction of orchards, garden, and farm crops is estimated approximately at $500,000,000 a year—more than $1,000,000 a day. Their havoc would be much more than this were it not for the quarantines and control work conducted by the United States Department of Agriculture through its Bureau of Entomology and its Federal Horticultural Board.

Only Few Native Pests.

Of all the insect pests and diseases that attack cultivated crops and cut into the profits of the American farmers severely, there are relatively few of the more important ones that are native to the United States. Like many other baneful things, insect pests and diseases have followed the course of civilization. They are carried in many ways from one country to another, and it is the work of the Department of Agriculture to guard the United States against their entry and to prevent their spread once they make their appearance here.

While many of the pests have come from European countries, Asia has contributed its share of them. Prominent among these for its destructive activities is the San Jose scale, which made its first appearance in the United States 40 or 50 years ago, having made its way here from China. It became widespread

throughout the United States in the late nineties, and at the present time there is practically not a commercial deciduous orchard in this country that does not have to be sprayed once a year to control this pest.

Some idea of the burden which this insect puts upon the orchardists of the United States can be had when it is realized that the expenditures for apparatus and spraying amount to approximately $10,000,000 annually. In addition to this are the losses that the insect causes in spite of this control treatment, and they are very large, especially in small orchards and household plantings where spraying is not commonly practiced. This insect alone undoubtedly has cost this country during its presence here upwards of $100,000,000.

The oriental peach moth, which gained entry in 1912 with imported oriental cherry trees from Japan, has just begun its spread and depredation. It affects practically all deciduous fruits, and bids fair to be as destructive as the well-known codling moth, the cause of wormy apples.

The Japanese beetle, brought in about the same time as the peach moth, has already gained such firm foothold that, in view of its habits and prolonged flight, it is probably incapable of extermination and may ultimately overspread the United States. It attacks not only practically all fruits but also many garden vegetables and corn. Attempts to check the spread of this pest are being made by means of Federal and local quarantines, particularly in New Jersey. Under this quarantine the Government maintains a supervision over the movement of articles likely to carry the pest from infested areas to other sections of the country. Another foreign pest in comparatively recent years which has made its appearance in this country is the European corn borer. Infestations have been discovered in several eastern States, and local quarantines by the Federal Horticultural Board have been instituted to prevent its spread to the corn belt. Recently heavy infestations were discovered in Canada, presenting a more immediate menace to the corn belt. Specialists of the department are now considering steps for guarding against this new source of danger.

Pests from Mexico.

Mexico has contributed its share of insect pests that are now established in this country to the destruction of American crops. Chief among these are the boll weevil, the pink bollworm, and the little Mexican beetle, known as the bean ladybird. The last, which has been discovered in Alabama, now threatens to spread to other southern States and inflict immense damage to the cowpea and bean crops.

The general public has its duties in aiding the Department of Agriculture to prevent the further spread of insect pests and diseases, and in cooperating renders a great service to the American farmer. Automobilists and other persons journeying through infested areas should carefully observe all quarantine regulations, being careful in transporting articles capable of carrying the insect.

Removes 74 Herds From Accredited List—Must Keep Cattle Free of Tuberculosis

Since the beginning of the work, about three years ago, the United States Department of Agriculture has removed 74 herds of cattle from the list accredited as being free from tuberculosis. The presence of one or more reactors was the cause for removal. The number of herds taken off the list is small compared with the total number of accredited herds, which now exceeds 4,000. The Federal Bureau of Animal Industry makes it plain that the list includes the names of only those persons who keep tuberculosis out of their herds.

Reactors Found in Most Cases.

In most cases where reactors were found among cattle which had passed the requisite number of official tests, reinfection was traced to carelessness. Either the accredited animals had been permitted to run in pastures with infected cattle or else animals of doubtful health had been brought on the premises and stabled with the others. This is in violation of the agreement which the owner signs when he applies to have his herd tested. In one instance a breeder with an accredited herd purchased an entire herd whose history he knew little about. About half of the animals bought reacted to the tuberculin test when it was applied. But instead of segregating for a time those which did not react, he immediately added them to his officially accredited herd. This was one of the herds taken from the list following the discovery of several reactors.

"The breeders must realize," a bureau official declared, "that if they take chances tuberculosis is likely to gain a foothold again, and if it does the herd can not stay on the list." In only 5 instances out of the 74 "discredited" herds the presence of reactors could not be explained. This is considered a small number in proportion to the nation-wide extent of the work. Where only one reactor is found in an accredited herd it is possible for that herd to get back on the list again within six months if a retest at that time shows the herd to be clean. When several reactors are found it takes from a year to a year and a half for the herd to again become accredited. In all cases reactors must have been removed.

There is increasing evidence also that cattle which, though not reactors, are "suspicious" should be looked upon as a constant source of danger. Frequently the disease is so far advanced in such cattle that they fail to respond to the test, yet are more dangerous to the herd than some reactors. Suspicious animals can not be officially condemned, but breeders who are familiar with the situation sometimes permit them to be slaughtered rather than jeopardize the health of other animals.

Guarding Animals at Shows.

"Another important precaution in tuberculosis-eradication work," the bureau official added, "is the showing of cattle at fairs and exhibitions. Owners of accredited herds are now demanding that such herds at least be kept in separate barns, so that they will not have to mingle with untested cattle. Some fair associations have gone so far as to require a tuberculin-test certificate for all cattle shown. Another risk—and it is a serious one—is to buy cattle from herds you know nothing about. Even when such animals are tested, and reactors are removed, there is a risk that even those which pass the test are not all entirely free from recent infection, especially when the original herd may have been half diseased. It is much safer to purchase cattle from a breeder who is known to have healthy stock."

SAVES FARMER $500.

Treating sheep for parasites saved one Monongahela County (W. Va.) farmer $500 this year, the United States Department of Agriculture is advised. During a two-weeks' period the Farm Bureau of Roane County, W. Va., had more than 700 head of sheep treated for parasites without fatalities.

Wise buying makes wages count more. Buy War Savings Stamps.

No Profit Selling Pigs and Buying Pork—Farmers Should Cure Meat Themselves

What is more inviting to a farmer than to come in from the barn on a cold, blustery winter morning to find on his breakfast table a dish well laden with home-cured ham, juicy, tender, and smoking hot? Why do not more farmers convert their crop of summer pigs into meat for their own use instead of selling it on the market and buying cured meats and high-priced pork products? There is profit in the transaction for the dealer and for the packer, but none for the farmer, who besides sacrificing profit has also given away one of his most valuable privileges—that of growing and preparing his own food products.

Turn Wastes into Profit.

Any farm will support a few pigs. The waste of the farm may be profitably converted into a valuable food product through the agency of a few young porkers. If more pigs are raised and more pork cured than can be consumed at home there is always opportunity for its sale among the neighbors.

A great many farmers who raise pigs feel that the expense of curing hams and preparing pork products is too great, but some of the best results are secured through the use of inexpensive supplies and equipment. The tools and equipment necessary for killing and cutting up a pig are: A straight 8-inch sticking knife, a cutting knife, a bell-shaped scraper, a meat saw, a hog hook and gambrel, and an old barrel for scalding.

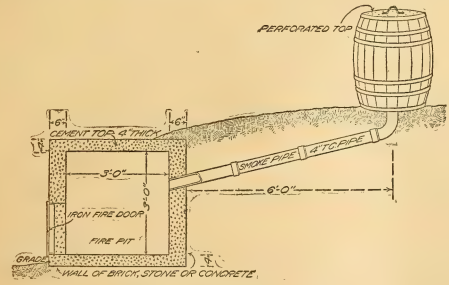
Many farms have an outbuilding while others have regular brick smokehouses in which the hams, shoulders, and bacons may be hung and smoked. A very satisfactory smokehouse can be constructed, as shown in the accompanying sketch. For a few pigs such small equipment is ample, but where many are to be killed and cured the equipment will need to be enlarged so that all the meat of a single killing can be cured at once.

Gives Delicate Flavor.

The smoking process not only helps to preserve the meat but also imparts a very delicate and desirable flavor which can not be obtained in any other way.

The meat for smoking, if brine-cured, should be taken from the brine, soaked in water for half an hour, washed, and hung in the smokehouse to drain. It should dry for 24 hours before the fire is started. Hang the meat at a distance from the fire so it will warm up gradually and not become too hot. Take care that the pieces do not touch one another.

For fuel, use green hickory, maple, or any hard wood. Never use resinous wood. The time required to smoke a lot of meat is from 36 to 48 hours, but a slower and longer smoking is desirable if the meat is to be kept for a long time.



A type of smokehouse that can be constructed quickly and cheaply.

When the smoking process is complete the meat should be allowed to cool and then be wrapped and stored. It should first be wrapped in heavy paper and then put into muslin sacks. In tying the top of the sack the old string by which the meat was hung should be removed and the top of the bag given a tight fold or double wrap to keep out insects. The bag is then brushed with a coating of yellow wash and the meat hung up until needed.

Yellow wash sufficient for 100 pounds of smoked meat may be prepared from the following recipe:

3 pounds barium sulphate.
.06 pound glue.
.08 pound chrome yellow.
.40 pound flour.

The Smithfield Process.

The celebrated Smithfield ham is like wine, the older the better, and it requires a different curing process. Smithfield hams are cured as follows:

The hams are placed in a large tray of Liverpool fine salt, then the flesh surface is sprinkled with finely ground crude saltpeter until the hams are as white as though covered by a moderate frost—or, say, use 4 to 6 ounces of the powdered saltpeter to each 100 pounds of green hams.

After applying the saltpeter, salt immediately with the Liverpool fine salt, covering the entire surface well. Then pack the hams in bulk, but not in piles more than 3 feet high. In ordinary weather the hams should remain in salt in bulk one day for each pound each ham weighs—that is, a 10-pound ham should remain 10 days, and in like proportion of time for larger and smaller sizes. Next, wash with tepid water until the hams are thoroughly cleaned, and, after partially drying, rub the entire surface with finely ground black pepper, after which they should be hung in the smokehouse and the important operation of smoking begun. The smoking should be done very gradually and slowly, lasting 30 or 40 days.

After the hams are cured and smoked they should be repeppered, to guard against vermin, and then bagged. These hams improve with age and are especially fine when 1 year old.

APPLES OF GOOD QUALITY ALWAYS FIND READY MARKET

Most markets can always find use for a good quality apple, no matter what its shape or the color of its skin may be. It is probably unreasonable to say that one market will take only certain varieties while another will take other varieties. Conditions are always changing preferences. For instance, due to prices, there was, in a certain year, a noticeably increased demand for box-packed fruit in some cities known as barreled-apple markets. The certainty of securing uniformly sized, highly finished fruit at extremely low prices was the only reason given for this condition, say fruit specialists of the United States Department of Agriculture.

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PRESS SERVICE
Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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CORN BORERS FLOAT TO SEA, INFESTING COAST ISLANDS

Partial explanation of the infestations of off-shore islands along the Massachusetts coast with the European corn borer was obtained recently by investigators of the Bureau of Entomology, United States Department of Agriculture, who have been watching the pest in eastern Massachusetts. Fields on several islands off the coast near Boston have been found infested. Recently two cornstalks were picked up in the drift on the beach of Inner Brewster Island, 9 miles at sea, and when examined were found to contain active corn borers. This discovery gives a new field for surveillance in the fight against the spread of the pest. The corn borer is particularly tenacious of life, and instances have been known where they would regain activity after being submerged in water for twenty-four hours or even longer.

TESTS DISPROVE OLD THEORY THAT CHARRING STOPS DECAY

The old theory that charring the butts of fence posts and telephone poles preserves the wood has been disproved by a series of tests recently conducted by the Forest Products Laboratory of the Forest Service, United States Department of Agriculture, on fences with charred and untreated posts of varied species. The charred posts proved in these tests to be even less durable than the untreated ones.

Theoretically, an area of charred wood around a post should prevent decay, because charcoal does not decay or encourage the growth of fungi. But the charred area around a post is not usually a solid covering. It is checked through in many places. If posts are seasoned before they are charred, the charring does not reach to the bottom of the season checks which are always present. If green unchecked posts are charred, checks will open through the charred part as the wood seasons. In either case the uncharred center of the post is exposed to fungus infection and will decay as rapidly as untreated wood.

Charring deep enough to resist decay would undoubtedly weaken a post of ordinary size.

DRIVE ON PREDATORY ANIMALS IN ARIZONA NETS BIG BAG

An extensive campaign carried on under direction of the Biological Survey, United States Department of Agriculture, against coyotes and other predatory animals in Arizona has resulted in materially cutting down the number of marauders. In one drive near Flagstaff 340 coyotes were killed in 10 days. Stanley P. Young, assistant predatory animal inspector, has sent to the survey a photograph of 11 coyotes which he personally noted one day, taken on a poison line laid out the previous evening. To produce these results he used pork-fat baits with 1-grain standard strychnine alkaloid tablets. Part of the carcass of some animal is generally used to attract the coyotes. Large stock raisers have lent enthusiastic aid to the campaign, which, they say, will save them thousands of dollars in sheep and young calves.

REFUSE ENTRY ON SHIPMENT OF FAKE SPANISH SAFFRON

One of the most ingenious dyestuff frauds that have come to the attention of officials was discovered a week or so ago by chemists of the United States Department of Agriculture, when a Spanish product shipped to this country as saffron was put to the test, and as a consequence refused entry.

Saffron, which is used as a dyestuff and also as a medicine and as a spice, represents the dried stigma of crocus. As it is necessary to pick the flowers over carefully by hand, the product is very costly, retailing in this country for about $15 a pound.

A consignment billed as saffron was held at Savannah on suspicion as to its genuineness. A sample was sent to the department for examination. Analysts found that the manufacturers had taken the flowers of a common plant similar to the Scotch thistle, colored them with two dyes, red and yellow, weighted them with saltpeter, borax, and glycerin, flavored them, evidently with saffron oil, and finally crinkled them to resemble the dried crocus stigmas.

ILLINOIS COMMUNITY TREATS SEED WHEAT AGAINST SMUT

The first large-scale attempt at community treatment of seed wheat with the combined copper sulphate and milk of lime method has just been completed in Madison County, Ill., where approximately 15,000 bushels were treated at a central treating plant under the supervision of representatives of the Bureau of Plant Industry, United States Department of Agriculture.

In the spring of 1919 leaf smut or flag smut was discovered in wheat fields in Madison County, Ill. This disease had long been known as destructive in Australia and elsewhere, and its introduction to Illinois was considered a source of great danger to American wheat growers. The United States Department of Agriculture immediately made a survey of infested farms and a local quarantine was placed on an area of 47 square miles by the Illinois State Department of Agriculture. Since that time every effort has been made by the National and State agencies concerned to stamp out the disease.

Some of the wheat varieties grown in Madison County are very resistant to the smut and the farmers are cooperating gladly in sowing only such resistant varieties. To prevent infection by spores in the soil it was required that all wheat sown this fall should be treated. A central treating plant was established and equipped in an old potato-shipping shed, where approximately 200 farmers had their seed wheat treated. With the apparatus provided four workmen were able to treat approximately 1,000 bushels a day.

ASK AID IN COMBATING CABLE BORERS.

The Bureau of Entomology, United States Department of Agriculture, has been called upon for aid in combating cable borers, which penetrate the lead-sheathed cables of telephone companies in California and elsewhere in the United States. Some seasons the damage is quite serious, moisture penetrating through the holes made by the borer and causing a short circuit in wet weather. Various kinds of suspension rings, lead alloys, and chemical repellants have been tried with little success, but the inroads of the borer have been checked by treating the suspension rings with soft tallow.

Farmers Burn Corn Only Under Economic Necessity, Says Agricultural Specialist

The burning of corn for fuel, however deplorable, may always be expected when the price of corn goes so low that it will not buy its equivalent in commercial fuel, according to Dr. H. C. Taylor, Chief of the Office of Farm Management and Farm Economics, United States Department of Agriculture. Commenting upon reports that farmers in parts of the corn belt were threatening to burn corn, because at present prices it was cheaper for fuel than coal, he said:

"Farmers will not burn corn instead of coal unless they are driven to it by economic necessity. If the prices of farm products are adjusted to pre-war levels no more rapidly than are the prices of things the farmer must buy, agriculture can be counted upon to continue the course it has taken for many years, but if the prices of farm products fall and the prices of other things remain high, the farmer will be compelled to reorganize his business on a more nearly self-sufficing basis, produce more largely to satisfy his own wants, and give less attention to production for the market. This would result in a decline in the commercial supply of farm products.

Are Steady-Minded People.

"American farmers are steady-minded people, and they would not precipitate the Nation into such a course from base motives. However, if the rest of the Nation fails to appreciate the necessity of farm prices having a satisfactory ratio to other prices, farmers may be forced to retrench to save their homes and protect their families.

ARGENTINE STOCK SHOW OPEN TO EXHIBITORS FROM U. S.

American stock breeders and distributors of dairy appliances who are looking toward the Argentine market will be afforded opportunity for demonstration at the annual international dairy exhibition of the Argentine Rural Society to be held at Palermo, a suburb of Buenos Aires, May 8–27, 1921.

The exhibition will be divided into three sections—the first for breeding and dairy cattle, sheep, and goats; the second for dairy machinery and appliances; and the third for dairy products. Applications for space should be addressed to the manager of the society, Sarmiento 834, Buenos Aires, where they will be received up to April 10.

Two representatives of the United States Department of Agriculture, David Harrell and H. P. Morgan, visited the exhibition last year while on a tour of investigation of live-stock and dairying conditions in South America. They report the farmers of Argentina to be deeply interested in improving the dairying industry, which is still in a primitive condition in many parts of the country, and to be friendly toward American breeders and manufacturers. They suggest that much more rapid progress in establishing American agricultural relations with South America can be made by practical demonstrations than by correspondence or advertising, declaring that so much erroneous advertising has been done by importers of stock and other merchandise that the people are skeptical of printed matter. They express the belief that there is an opening for the sale of American cattle and equipment, remarking that, "it is impossible that this good cattle country should stay permanently in its present condition, which is about that of the Southwest 40 years ago."

The Argentine ambassador at Washington is manifesting much interest in the exhibition, and information regarding it can be obtained direct from him without the delay of writing to Buenos Aires.

TEXAS BOYS AWARDED TRIP TO STOCK SHOW IN ENGLAND

Three Texas boys will get a trip to England at the expense of the Southeastern Fair, which closed its annual exhibition at Atlanta October 23. These boys are Gilbert Wieling, of Martin, Falls County; Jack Turner, of Hillsboro, Hill County; and Alva Debriam, of La Mesa, Dawson County. They will attend the Royal Live Stock Show at Derby next July with William Cook of the Texas Agricultural and Mechanical College, I. W. Hill in charge of boys' club work in the South, States Relations Service, United States Department of Agriculture, and a county agricultural agent to be selected. The boys are under 18 years of age.

A stock-judging contest open to boys' clubs of the various States was one of the biggest attractions of the Southeastern Fair. Teams of three competed from 11 States. These teams had been selected in competitions in their various States, where they had shown their ability to judge cattle, sheep, and hogs of various breeds, on the established points. There were 12 animal rings at the Atlanta fair. The cattle breeds were Hereford, Holstein, Shorthorn, Jersey, Aberdeen Angus, and Guernsey; the sheep, Southdown and Shropshire; and the pigs, Hampshire, Poland-China, Duroc, and Berkshire.

There were 300 scoring points for each ring, making a total of 3,600 perfect scores for judging. The stock was judged by experts, and the score cards of the boys were checked against theirs. Each team made a round of the rings, and as they recorded their scoring they explained the points upon which they rendered judgment. The judge then explained the fine points of the animals. This feature not only rendered the contest educational in character but gave a general feeling of satisfaction with the management of the contest to all concerned. The teams were followed by interested crowds of farmers and stock raisers throughout the contest.

The Texas boys scored 3,110 perfect points out of a possible 3,600; Mississippi followed with 2,965. Other States' scores were Kansas 2,953, Virginia 2,879, Iowa 2,869, Florida 2,868, Arkansas 2,772, Georgia 2,769, South Carolina 2,769, Louisiana 2,739, Michigan 2,737, North Carolina 2,685, Oklahoma 2,677, and Nebraska 2,624.

The scoring contest aroused interest throughout the country, where the boys' club movement fostered by the United States Department of Agriculture and the State agricultural colleges has been very strong. In several States the winning teams were picked by elimination tests in connection with judging contests at county and State fairs. An effort will be made next year to have the judging contest participated in by all the States in the Union, with entries possibly from Canada and other countries.

WILL STORE SWEET POTATOES.

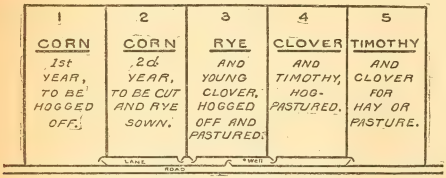
Farmers of Manatee County, Fla., this year will store sweet potatoes on an extensive scale for the first time, due to the work of their county agents. Because of the difficulty of obtaining proper storage, it formerly was a common occurrence for farmers to ship their potatoes to northern markets or canneries within a short time of harvesting, and later find themselves compelled to purchase potatoes by the 3-pound can at several times their original market price. A community storage house with a capacity of 10,000 bushels has been erected, and farmers have space allotted where they can place their potatoes and take them out at will.

Labor Difficult Problem in Corn Belt—Five-Year Rotation System Recommended

Unquestionably the most difficult problem which the average corn-belt farmer has to meet is that of labor. This condition is not improving, and it probably will be necessary to reorganize a large number of farms. There are two possibilities for the farmer who faces an acute situation of this nature; he may cut down his acreage so that he can handle it himself, or he may adopt a method of farming which will eliminate a part of the work required at rush seasons. The latter method when suitable has the advantage of not lessening the farm income.

Pigs an Aid in Harvesting.

The possibilities of saving labor and maintaining the original acreage by the use of pigs to assist the farmer in harvesting his crop have been thoroughly considered by the United States Department of Agriculture. Pigs successfully and profitably harvest the greatest variety of farm crops. Rye, corn, clover, soy beans, rape, and other forage crops which can be grown in the corn belt are gathered in this manner with a maximum of profit and a minimum of labor to the farmer.



Plan of a farm run on a five-year rotation.

The method to be followed on a 100-acre farm is shown in the accompanying diagram. It is planned to run the farm on a five-year rotation system. In field No. 1 is first-year corn, or corn the first year after sod. This corn is grown and hogged off as soon as it is ripe. This process generally begins as soon as the corn is hard and when the hogs can be brought up to full feed, or about September 1 to 10. On some farms it is a commendable practice to sow soy beans or rape or both at the last cultivation of the corn in order to furnish pasturage for the hogs while gathering the corn crop.

Field No. 2 is second-year corn, or corn following corn. Rye must be sown here in the fall in order to furnish a field of rye for the next season, which in turn affords a ready means of getting a stand of clover and timothy. If it is a normal season and the corn stands well, the rye may be sown in the standing corn with a one-horse drill. If this is not possible, corn must be cut as early as is allowable, the ground prepared, and the rye sown after the corn has been cut and shocked. Rye may be sown much later than wheat with more certainty of success.

Field No. 3 is devoted to rye during the entire season. In the fall of the previous year timothy is sown with the rye, and the clover is sown early the next spring, preferably in February. During the spring this field is pastured by the hogs as long as it is palatable. It gives an excellent pasturage which is quite valuable for young hogs and brood sows. As soon as it becomes tough the hogs will begin to chew it for the juices, and throw the remainder out on the ground. This is a sign that they have derived about all of the benefit they can get from the green pasturage. They are then taken off and are not returned to the field until about two weeks after the rye has ripened. Then they are allowed to gather the entire crop of rye and graze on the young clover that has come up from the spring seeding.

The clover and timothy in field No. 4 are devoted entirely to hog pasture.

In field No. 5 the clover and timothy occupy the ground for the second year. It should be nearly all timothy, but sometimes a good deal of clover may be present also. The grass crop on this field is cut for hay, and may be sold or fed to live stock. Late in the same fall it is plowed for the first-year corn, which follows the next year.

Harvests Do Not Overlap.

Following this system the farmer harvests but two of his five 20-acre plots, and it will be observed that labor distribution is fairly even so that one harvest does not overlap another. With modern farm machinery one man can probably manage his farm alone if he follows this plan. There is an additional advantage gained in the fact that the system is a soil improver. He recovers 80 per cent of the fertilizing value of the crops which the hogs harvest for him, and the system of cropping allows for a large amount of organic matter which is plowed under. Farmers' Bulletin 614 discusses the plan in detail.

PROSPERITY SHOWS RESULTS OF BANKERS' AID TO FARMERS

Cooperation between bankers and farmers in the acquirement and distribution of high-class animal and plant stock is helping to promote a prosperous condition in Wisconsin, the United States Department of Agriculture is advised. The Banker-Farmer Exchange conducted under the auspices of the Wisconsin Bankers' Association listed 2,131 head of cattle, valued at $281,000, during its first year of operation, and obtained inquiries for 1,698 head. The exchange has its headquarters at Madison, the State capital. A commission of 5 per cent, paid by the seller, is charged on all sales made through listings to cover expenses, but no charge is made on sales outside the listings.

When a farmer lists live stock for sale he signs a statement on the listing blank that the animals are healthy and sound, except when otherwise stated, and that the cattle have been or will be tested for tuberculosis. Male animals to be used for breeding purposes must be purebred. With every transaction, two banks and the exchange are concerned, and if there is any dissatisfaction, both banks know it. A breeder can not afford to risk his standing with his bank by misrepresenting his product. Should he attempt it, he loses the privilege of the service. The farmers are fast becoming acquainted with the exchange and are forming the habit of reporting their wants to the local banks.

Cooperative marketing has resulted successfully for the cattle and hog growers of Craighead County, Ark. Cattle formerly sold at $3 to $6 a hundredweight under St. Louis markets, and hogs at $2 to $7 per hundredweight below the market. A carload of 94 hogs was originally collected and shipped through the activity of the county agent and brought from $5 to $11 above the local price. Local buyers are now paying approximately the St. Louis price.

Protecting Winter Shipments of Potatoes—Heat Needed in Cars to Keep Out Frost

Most of the 413,000,000-bushel crop of potatoes harvested in the United States will be shipped by rail, and a large part of it will go in box cars at a time when the temperature is below freezing. These cars will remain exposed to the weather for days at a time, and even where refrigerator cars are used the frost will permeate the thick insulated walls. Experiences show that to ship potatoes successfully in winter artificial heat is necessary, and in sections where the most potatoes are shipped it has been found expedient to install stoves. Few railroads have yet come to the point of heating produce cars, although it is hoped that more will do so eventually.

Studied Car Heating.

At a time when the conservation of every ounce of food was vital the Bureau of Markets, United States Department of Agriculture, made a study of car-heating arrangements for potato shipments, and the method devised has been put into successful use. In using stoves in potato cars thorough distribution of heat is essential. The stove is placed in the middle of the car, and unless special precautions are taken it will overheat the potatoes near the door, while those farther away, especially on the floor, will fail to get heat and become frozen.

The most successful method is to build a false floor and walls with a bulkhead at each side of the stove so that the hot air may circulate freely all around the potatoes, returning under the false floor to the point of heating. It is necessary also to paper the entire interior of the car to prevent too rapid cooling of the circulating air.

Equipping the car in this way is somewhat expensive, but not in comparison to the value of the potatoes protected, especially when the equipped car can be used several times, as is the case under arrangements in Maine and other potato centers. The lumber required for a standard car 8 by 8½ by 36 feet, with doors 5 feet wide, is as follows:

13 pieces 2 by 4 inches by 14 feet long.
8 pieces 2 by 6 inches by 16 feet long.
1,300 square feet of 1-inch lumber 16 feet long.
2,250 square feet of building paper.

Place 7-foot studding around the walls of the car about 3 feet apart with blocks behind so that there is a total air space of 6 inches at the end and an air space on the sides 4 inches at the top spreading to 6 inches at the bottom. Flooring should be laid on 2 by 6 stringers set up edgewise and run lengthwise of the car. It is important that the spaces should be left open at both ends so that there is perfect circulation of the warm air. The flooring and sides should be double, with building paper between the thicknesses.

Air Should Circulate Freely.

The spaces between the studding should be left open at the top and bottom. Do not make the mistake of nailing a strip across the end of the stringers toward the stove, as this will prevent warm air circulation.

A special fire door is necessary for the car, with a hole for the stovepipe. Railroads have special regulations for the placing and securing of the stove. The car should be heated for at least six hours before loading, and longer in extremely cold weather.

A suitable bulkhead is to be built on each side of the door, to be put in place as the potatoes are loaded. The sacks of potatoes should not be piled closer than 8 inches to the ceiling, as circulation of air is essential. The main principle of shipping potatoes safely in heated cars is to secure perfect circulation of air completely around the cargo. When the car is fitted up in the manner described here, the air flows over the top of the bulkheads, which, of course, are left several inches from the ceiling. It circulates over the potatoes, the papered ceiling preventing too much cooling from the outside, and then comes down to the end of the car and back under the floor, some of the air currents also flowing down the sides between the studding.

As cars thus equipped come more into use, better arrangements are being made with railway companies for preserving the equipment. In Maine the potato cars with stoves are returned to shippers free of charge, and in Western States the general rule is to return the lumber and stoves free. Even where full freight rates are charged on the return of the equipment, the expense is reasonable when compared with the loss which would occur from shipping in unprotected cars.

KITCHEN IS HOME'S WORKSHOP.

The kitchen is the workshop in most farm homes. In it the housekeeper and her helpers prepare the food for the family, and from it as a center carry on most of the other housework.

More and better work can be done in a well-lighted shop arranged for the comfort and convenience of the workers and equipped with good tools than in a dark shop where much time must be spent in unnecessary steps and energy wasted with scattered equipment. Business men have found this a sound principle, and it should be applied to the farm kitchen so that the housekeeper can do her work more quickly and with the least fatigue.

CARE OF FARM IMPLEMENTS SAVES NEEDLESS REPAIR BILLS

(Continued from page 1.)

other support under the midpoint of the tongue, so that it will not acquire a permanent sag. If the mower is stored with the cutter bar in a vertical position, place a block of wood under the shoe to take the weight off the frame. All accumulations of vegetable matter and dirt should be removed and all bearings and other bright parts of the machine oiled or greased. Much the same rules apply to reapers and binders.

The time to care for each implement is when its work is finished. Pressure of other work, however, frequently makes this inconvenient, but nothing should be allowed to interfere with getting all machinery greased, and, if possible, under cover before the beginning of winter. Then, as early in the winter as you can find time for it, go over every piece and see what repairs are needed. If new parts have to be ordered, order them at once. A great deal of valuable time is lost every spring waiting for repair parts to arrive from the city.

The best possible use should be made of such housing space as is available, and grease and paint should be used without stint. Any farm implement with bearings and bright parts well protected with heavy grease is better off out in the weather than standing in a shed without any protection by grease or oil.

The United States Department of Agriculture has two bulletins—Farmers' Bulletin 946 and Farmers' Bulletin 947—devoted to the repair and adjustment of farm implements. With all implements safely sheltered for the winter, you have time to write for these bulletins and to use the information they contain in putting your implements and machines in the best possible condition for next crop season.

The health and comfort of the home depends to a considerable extent upon the heating apparatus, which in importance is second only to that of sanitary plumbing.

Finding Wider Uses for Exhaust Steam—Enables Creameries to Cut Fuel Bills

Reports received by the Dairy Division, United States Department of Agriculture, from creameries in Minnesota, Wisconsin, and Iowa, indicate that the use of water heaters, installed for utilizing the exhaust steam from steam engines, has resulted in an average saving of 20 per cent in the cost of fuel. The savings reported range from 13 to 50 per cent, representing an average of from $100 to $300 in one year. These economies are largely the result of department activities in pointing out that exhaust steam may be utilized to a much larger extent than has been the case in the past. In fact, the department field man often took off his coat and assisted in the work of installation.

Pleased with Results.

Operators at all the creameries where exhaust-steam heaters have been installed appear to be well pleased with the results obtained, as is evidenced by extracts from some of the reports sent in.

"I would not take $1,500 in gold for my exhaust-steam heater if I could not get another one," writes one operator from Wisconsin. "An accurate estimate of the fuel saved in one year as a result of installing the heater amounted to 25 tons of good-grade soft coal, which cost us about $8 per ton in the bin. This means $200 saved in fuel, to say nothing of the saving in labor, which is nearly equal to the saving in fuel."

"We made 212,000 pounds of butter last year," writes the manager of another creamery in the same State, "and we saved just about one-third on our fuel bill for the year. Since we have installed this heater my motto has been 'less fuel, less labor, and more hot water.' I like it so well that I would never be without a heater again around a creamery, if there was any possible way of obtaining one."

"Our heater has been so satisfactory," writes a Minnesota creameryman, "that we have often felt like kicking ourselves for not pushing the matter harder and inducing the board of directors to install such a heater long before, even if funds were not available. There is no limit to the general satisfaction it has given."

Another creamery operator in Minnesota says that the fuel saved during the past year amounted to 22 per cent, and that it looked as if the record for 1920 would be even better. "As to convenience," he adds, "it certainly is great, for it saves the operator a lot of extra labor, and gives him more time in his workroom in the creamery, which is of more value than spending this time in the boiler room."

Pays for Itself Twice a Year.

From central Wisconsin comes the following report: "I believe that the heater pays for itself at least twice a year, as we have a boiler-feed pump and do not use the injector except when steam gets high and the engine is standing still. We also use it to scald the churn, which is very economical and handy."

"The exhaust-steam heater has not only added greatly to the convenience of the creamery by making a supply of hot water available at all times, but has also saved at least 18 per cent of the fuel bill," writes a Minnesota creamery manager. "We also use the exhaust steam for pasteurizing cream, which has added greatly to the conservation of fuel."

How the Heater Saves Fuel.

A creamery which uses a steam engine and permits the exhaust steam to escape unused is wasting a valuable by-product. Exhaust steam can be used successfully for heating milk, cream, boiler-feed water, wash water, and the building. In the majority of small creameries the boiler is fed by means of an injector, but this is not an economical apparatus for that work, because it requires live steam for its operation and can not handle hot water. For every 10° F. that water is heated before entering the boiler, approximately 1 per cent less fuel is required to generate a given amount of steam; and for each 10° F. increase in feed-water temperature the boiler capacity is increased approximately 1 per cent.

The use of exhaust steam for heating wash water will still further reduce the fuel cost. It is estimated that in a creamery making from 100,000 to 300,000 pounds of butter annually, a minimum of 800 gallons of hot water is used daily, which when heated with live steam from the boiler, from 50° F. to 170° F., requires approximately 127 pounds of coal. When the heating is done with exhaust steam, there is a net saving of 127 pounds of coal a day; and if operated 300 days a year, an annual saving of 38,100 pounds of coal for wash water alone.

Detailed information on exhaust-steam water heating will be found in United States Department of Agriculture Bulletin 747, "Economical Use of Fuel in Milk Plants and Creameries," which may be obtained on request from the Department of Agriculture, Washington, D. C.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended November 6, 1920:

Grape Propagation, Pruning, and Training. (Revised.) Farmers' Bulletin 471.

How to Detect Outbreaks of Insects and Save Grain. (Revised.) Farmers' Bulletin 835.

Breeds of Dairy Cattle. (Revised.) Farmers' Bulletin 893.

Brood Coops and Appliances. Farmers' Bulletin 1107.

Culling for Eggs and Market. Farmers' Bulletin 1112.

The Beef Calf, Its Growth and Development. Farmers' Bulletin 1135.

Forestry and Farm Income. Farmers' Bulletin 1117.

Growing Crimson Clover. Farmers' Bulletin 1142.

Growing Corn in the Southeastern States. Farmers' Bulletin 1149.

Poison Ivy and Poison Sumac and Their Eradication. Farmers' Bulletin 1166.

The Production and Utilization of Corn Oil in the United States. (Professional Paper.) Department Bulletin 904.

The Work of the Umatilla Reclamation Project Experiment Farm in 1918 and 1919. Department Circular 110.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1107; Department Bulletin 904; Department Circular 110.

ENROLLS BIG POULTRY FLOCK.

A flock of 20,000 poultry, all Single-Comb White Leghorns and all standard bred, is one of the largest to be enrolled in the "Better Sires—Better Stock" campaign conducted by the United States Department of Agriculture and cooperating agencies to improve the average quality of domestic animals and fowls in the United States. This flock, in King County, Wash., ranks among the largest and best utility flocks in the country. The owner also reported a herd of 173 Holstein cattle and 21 Duroc-Jersey swine.

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NEW ORDER RELEASES LARGE AREA FROM TICK QUARANTINE

Other Sections Requarantined Because of Failure to Complete Work.

Approximately 218,000 Square Miles Held to Be Infested December 1, When Order Becomes Effective—Work Shown to Be Progressing Very Satisfactorily.

The release of 32,171 square miles of quarantined area in the cattle-tick infested States of the South is made in a revised quarantine order signed by Secretary of Agriculture Meredith, which becomes effective December 1, 1920. Failure of county officials to cooperate with the United States Department of Agriculture in eradicating the tick in their areas caused the requarantining of 7,917 square miles. Under the revised quarantine there will be approximately 218,000 square miles held to be infested.

Areas Affected.

The effect of the new order is as follows:

In Alabama the following counties and parts of counties are released from quarantine: Fayette, Lamar, and Washington; the remainder of Bibb, Calhoun, Cherokee, Cleburne, Houston, and St. Clair; and a portion of Shelby. A portion of Jefferson County and a portion of Mobile County are requarantined.

In Georgia the following counties are released from quarantine: Baker, Ben Hill, Bleckley, Bulloch, Crisp, Decatur, Dodge, Dooly, Evans, Glascock, Laurens, Macon, Pulaski, Seminole, Taylor, Telfair, and Wilcox.

In Louisiana, Arcadia Parish is released from quarantine; and St. Helena, Livingston, Sabine, La Salle, and Calcasieu Parishes, and a portion of Ouachita Parish, are requarantined.

In North Carolina, Pasquotank County is released from quarantine.

In Oklahoma the following counties and portions of counties are released: Atoka and Bryan, the remainder of Latimer and Sequoyah, and a portion of La Flore and Choctaw.

In Texas the following counties and portions of counties are released from quarantine: Bell, Brown, Burnet, Camp, Coryell, Delta, Denton, Falls, Franklin, Gillespie, Hill, Hopkins, Lampasas, Limestone, Mills, Navarro, San Saba, and Wise, and a portion of Comanche and Lamar.

The existing quarantine of areas in the States of Arkansas, Florida, and Virginia, and the Territory of Porto Rico is continued.

Good Progress Made.

The revised quarantine shows that work against the cattle tick generally is progressing very successfully. Failure of local authorities, however, to cooperate with State and Federal officials in "mopping up" their sections is responsible for many districts still being held under quarantine which would otherwise be released. It is expected, however, that by next year such cooperation will be secured that a much more substantial area will be freed from quarantine.

PROFITABLE DAIRY HERD FROM SMALL BEGINNING

To illustrate how a good herd of cattle may be developed from a small beginning, the United States Department of Agriculture makes public the following letter from a farmer near Nokesville, Va. This letter is typical of many contributed by practical farmers aiding in the "Better Sires—Better Stock" campaign.

"I am a farmer and dairyman. I milk 15 cows and raise about 2 calves a year so as to be able to call my herd 2 cows a year and replace with young cows.

"I started with common grades of all kinds, but they were good ones. Then I began using my neighbor's purebred bull, and kept the best heifers. But this was slow progress, so I bought six grade Holstein heifers and also a purebred bull. Then I added two purebred cows.

"I now find a ready sale for stock I wish to sell, even for my grades. When one uses a good bull and good cows, well cared for, he does not have any scrub calves."

The letter points out clearly how it is possible for one to develop gradually into a breeder of purebred and high-grade live stock.

U. S. HOGS FEATURE SOUTH AMERICAN LIVE-STOCK SHOW

Representatives of U. S. Department of Agriculture Describe the Event.

Twice as Many Hogs Shown This Year at Palermo, Argentina, as There Were in 1919—Largely a Cattle Show—Observations of Interest to U. S. Swine Breeders.

Noteworthy differences between Argentine methods of holding a swine show and those in the United States are described by E. Z. Russell and L. B. Burk, who visited Argentina as representatives of the United States Department of Agriculture.

These men attended the recent International Live Stock Exposition at Palermo, Buenos Aires, and give the following observations on matters which are believed to be of interest especially to swine breeders of the United States:

"In the hog division of this show there were 489 animals shown, divided by breeds as follows: Berkshires, 259; Duroc-Jerseys, 92; Poland Chinas, 53; Middle White Yorkshires, 28; Large Blacks, 18; Chester Whites, 13; Tamworths, 12; Hampshires, 8; and Spotted Poland Chinas, 6. The Chester Whites and Spotted Poland Chinas were the ones shown in the United States National Swine Growers' Association view herd.

"We are told that there were more than twice as many hogs in the show this year as there were in 1919. The Palermo live stock show is largely a cattle show. There was quite a good showing also of horses, sheep, poultry, grains, and grasses.

Hog Pens Noticeably Small.

"The pens used for the hog exhibit would not do for a hog show in the United States. These pens were about 3 feet 6 inches by 5 feet, and constructed of material that would not by any means confine our big hogs.

"At Palermo they do not permit on the grounds any animals that are not listed in the official catalogue. Each animal is given a number, and a number card is

posted on the stall or pen so that a visitor can take the official catalogue and readily locate any animal. The general arrangement is to place all animals of the same breed and age in a particular location and next to them animals of the same age, but a different breed. For instance, along one row will be the aged Berkshire boars, next the aged Polands, next the aged Durocs, and so on all through the show. By this arrangement an exhibitor filling several classes will have his hogs scattered in all parts of the barn.

"The showing of the hogs was very interesting. In the first place the owner of the hogs never gets into the ring. The animals are practically always brought into the ring and shown by a laborer provided by the management or by the auctioneer firm who sells the hogs on the grounds. We didn't see a hurdle used during the whole show and in consequence witnessed several boar fights. The men driving the hogs into the show ring have whips and don't hesitate to use them. Once in a while a hog would get away and he would be run down and either roped or carried into the ring by the laborers. Before the hog is taken from the pen a string is tied around his body just behind the front legs and his number attached to the string. The numbers were generally lost off before the hog got back to the pen. The method also has a tendency to make the hogs look weak in the heart.

"Two judges tied the ribbons; one had judged the Hereford cattle, and the other was an Argentine Shorthorn breeder. It was evident to hog men, both exhibitors and visitors, who watched the work that neither of those men were familiar with the points in a hog that go to make up a profitable animal. For instance, in the Poland-China classes any animal having any white hairs or white spots except the six white points, was either disqualified entirely or set down in the class.

"A very large per cent of the hogs on the grounds were what the 'States' hog man would call small type or 'hot bloods.' There were, however, some very creditable animals, but they were not placed up in the awarding of the prizes. The noticeable exception to the type generally shown were the animals in the view herd shown by the National Swine Growers' Association. They were the attraction of the show and were also appreciated by the practical hog men who saw them.

Awards Made First.

"All the ribbons in the live-stock classes at Palermo are tied before the opening of the show. The awards are posted on the pen or stall so that visitors can readily see just what the animal won, if anything. A very large per cent of all live stock sent to the show is sold at auction on the grounds. Any prize winners not sold are taxed an extra amount by the show management. The commission for selling is 6 per cent, which is paid by the purchaser. Half of this commission goes to the show management and half to the auctioneer. The sales start with the opening of the show and continue until everything is sold.

Method of Selling Hogs.

"The cattle, horses, and sheep sold on the ground are auctioned off in sale rings, where seats are provided, but the hogs are sold at the pens, the auctioneer and crowd going from pen to pen. By this method the seller of a hog has no chance to show his animal nor does the purchaser have a chance to see him. The grand champion boar of a breed is sold first, next the reserve champion, then follow the other boars of that breed. The next breed follows in the same order until all the boars are sold. Then follow the sows in the same order. No definite time can be given of the time any animal will be sold. If one wants to buy he must watch the progress of the sale and be on hand at the right time.

"An exception to the order of selling was made in the case of the hogs shown by the United States National Swine Growers' Association. These hogs were not entered in competition, but were shown strictly as a view herd. Most of the pens had to be rebuilt to hold these hogs. Visitors couldn't get a fair look at them in the pens, so we were anxious to show and sell them outside. We asked this privilege of the management, but it was at first refused. We finally received permission to sell not more than six in the show ring for the purpose of getting motion pictures.

Bidding for American Hogs.

"Up to the time these hogs started to sell, the top price that had been paid was for the Berkshire Champion boar, viz, $1,500 in Argentine paper money, or approximately $600 gold. The first view-herd hog sold was a Poland-China boar, which brought $1,800 paper, the next over $2,000 and the next $4,500. It was evident, by this time, than Argentine hog men were there to get some of the hogs we were offering. It was also evident that the management realized that we had something to sell that Argentine hog men wanted, for they came to us and said we might sell all our hogs outside if we desired. The sale was snappy. All the 48 head were sold in less than two hours. The average prices, in gold, were as follows: Poland-Chinas, $1,035; Duroc-Jerseys, $792.50; Berkshires, $388; Spotted Poland-Chinas, $272; and Chester Whites, $100. The general average of the 48 head was $492.75.

"The disappointments of the sale were the prices for Spotted Poland-Chinas and Chester Whites. Yet when we take into consideration the fact that hog men here in Argentina have been prejudiced against spots on Poland-Chinas it is not suprising that the Spotted Polands did not bring more. The Chester Whites were splendid animals and should have brought very much better prices. The fact stands out, however, that this is the first time an animal of this breed has ever been seen in Argentina, as far as we could learn, and also that the hog men here were prejudiced against the white color.

"If the number of hogs shown at Palermo in 1920 as compared to 1919 is an indication, the hog business in Argentina is rapidly advancing."

OFFERS NEEDED INFORMATION FOR OWNERS OF WOODLANDS

In response to a widespread demand for fundamental and practical information on forestry presented in untechnical language, the United States Department of Agriculture recently published Department Bulletin 863, Forestry Lessons on Home Woodlands.

This bulletin is in the form of lessons for school use; but it contains a wealth of up-to-date information on the principles and practice of forestry that will meet also the requirements of the farmer and the general public. The farmers of the United States own more timberland than all other private timberland owners put together, and the proper handling of their woodlands will go a long way toward checking the shrinkage in our timber supply. A knowledge of how to measure and estimate their timber, how to market it, how to protect their woodlands and improve them, how to use the product to best advantage, and much other information of practical value may be gained from the bulletin by farmers and woodland owners generally.

For the student and the teacher there are copious and clear directions for field and desk study, a simple but accurate key to the species, and a list of 100 important forest trees with remarks on range and on botanical characteristics.

The bulletin may be had upon request of the United States Department of Agriculture, Washington, D. C.

The common barberry, once a familiar shrub in all parts of the Northeastern and Central Western States, is being eradicated through the efforts of the United States Department of Agriculture, which found that the shrub was an enemy of wheat in that it harbored rust spores during the winter. An eradication campaign is being carried on in 13 States.

What are Vitamines?—Frequent Question That Is Answered Best By What They Do

"What are vitamines?"

This is a question asked repeatedly since the importance of these compounds in foods has come into prominence, but no definite answer has yet been given. Investigations by scientists at universities, agricultural experiment stations, and institutions for medical research have revealed much information regarding the function of vitamines in body maintenance and building, and the parts of the various foods in which they are to be found.

That vitamines are compounds absolutely essential in the food, in order to maintain the weight of the body and produce growth, has been definitely proved. The lack of vitamines causes deficiency diseases, so named because they are due to lack of something in the diet. Vitamines are present and are needed in such small quantities in the food that chemists have not yet been able to isolate them from the many other compounds which are in foods. For this reason, we know very little of the actual character of vitamines.

Three Types of Vitamines.

According to a statement by Dr. Carl O. Johns, formerly in charge of nutrition work in the Bureau of Chemistry, United States Department of Agriculture, vitamines have been classified into three different types depending upon the functions which they have in promoting well-being and growth.

The first type is known as water-soluble vitamines, and these are necessary in order to obtain growth from food. Lack of these causes beri-beri, which manifests itself by disease of the nervous system and by other symptoms. These vitamines are found in seeds, in green plants, in certain bulbs and fleshy roots and fruits, and in milk and eggs, as well as in certain organs in the animal body. The seeds referred to include beans, nuts, and the various cereal grains. When cereals are very highly milled in order to obtain a very fine white flour, a large part of the vitamines may be removed. Vitamines are also lost when rice is polished in order to remove the outer layers which contain most of the vitamines. It is for this reason that a diet consisting mainly of polished rice may cause beri-beri, while unpolished rice does not cause this disease.

The second type is known as fat-soluble vitamines, and these are found in butter, eggs, milk, and in certain animal organs such as the heart, kidneys, and liver, and to some extent in other fats as well as in green vegetables. They also exist in smaller quantities in certain seeds. When fat-soluble vitamines are absent from the diet, animals and man are subject to a disease of the eyes, which appears to be related to xerophthalmia and which, if prolonged, may produce blindness.

Best Source in Vegetables.

The third type is known as antiscorbutic vitamines—that is, those which prevent scurvy, which manifests itself by disease of the bones as well as in other ways. These vitamines are found in oranges, grapefruit, lemons, and other citrus fruits, and in green vegetables, such as tomatoes, spinach, and lettuce, and in eggs and raw milk. The drying of vegetables frequently destroys the activity of the antiscorbutic vitamines. The best source of vitamines is in the leafy parts of vegetables, and this is one of the reasons why spinach, lettuce, and cabbage are valuable foods.

WARNS FARMERS AGAINST SPREAD OF WILD CHICORY

One man's meat is another man's poison; and chicory, grown as a vegetable in Europe, is likely to become a pest over here, says the United States Department of Agriculture.

Chicory is grown as a vegetable and forage crop in Europe and to a lesser extent as a vegetable in the United States. In some sections, notably in Michigan, there is a considerable production of the root for use as a coffee substitute. It readily runs wild, and the wild form has become in recent years a troublesome weed from the State of Virginia northward. Its spread has increased from year to year until the Department of Agriculture finds it sufficiently disturbing to justify a warning to farmers.

The seeds of the wild forms are usually distributed in grass and clover seed, in which it occurs as an impurity. Farmers should watch for the appearance of the plants, readily identified by the blue flowers and thick roots, and eradicate it by cutting an inch or so below the soil surface. After cutting, drop a pinch of salt on the severed root, which will prevent sprouting. During the morning hours the bright, blue flowers are very conspicuous and it is easy to locate the plants and either pull or cut them. When it appears in quantity it may be eradicated by growing an intertilled crop, such as potatoes or corn, for at least two years. Continuous grazing by sheep or goats will also help destroy the weed.

Chicory was brought into Massachusetts from Holland in 1785. The principal use of the plant is as a coffee substitute and adulterant, for which the roasted dried root is used. Improved varieties of chicory are used as salads and greens. The young, tender roots are also edible. One variety produces witloof, a vegetable that is becoming increasingly important. As a forage plant chicory is little esteemed in the United States, but in Europe it is regarded as a valuable element in sheep pastures.

Information regarding the control and eradication of chicory is contained in Circular 108, United States Department of Agriculture.

TOBACCO BECOMES IMPORTANT IN VALUATION OF ALL CROPS

While the value of the tobacco crop is of great importance locally, it has become a matter of some consequence also as an item in the national total of all crops. Its fraction of the total is small because of the towering magnitude of corn, cotton, wheat, hay, and oats, yet the tobacco crop is exceeded in value to the producers by only six crops, and in 1919 its value was equal to the combined value of apples, cranberries, oranges, peaches, cowpeas, hops, soy beans, broom corn, and maple sugar and sirup; it almost equaled the value of the potato crop; it was more than two and one-half times the value of the barley crop; and its value was greater than the combined value of buckwheat, the kafirs, rice, rye, flaxseed, and sugar beets. These comparisons are made in an article contained in the forthcoming Yearbook of the United States Department of Agriculture.

To the great value of $402,000,000 for the tobacco crop of 1918, and $543,000,000 for that of 1919, the crop has increased from the $10,950 of the Jamestown crop of 1618. It is computed that the crop of 1664 was worth $734,000 to the colonists; $1,030,000 was reached in 1684, and $1,114,000 in 1698. By 1762 the value had become $4,413,000, and this seems to have been about the limit until 1790, when the estimate is $4,420,000. The amount had become $11,000,000 by 1847, $19,900,000 by 1853, $37,000,000 by 1866, and $106,000,000 was reached in 1909.

Weekly News Letter

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COMMISSION CASES BEFORE COURTS FOR DETERMINATION

The Department of Agriculture recently explained the status of the litigation growing out of orders issued by the Secretary of Agriculture under the Lever food-control act in August last requiring live-stock commission men at Chicago, Kansas City, Omaha, and East St. Louis, to discontinue certain commissions for the sale of live stock, which commissions the secretary found to be unjust, unreasonable, discriminatory, and unfair.

Certain of the live-stock exchanges, of which the commission men are members, protested the orders and sought to have them withdrawn or revoked. This the department declined to do. All the commission men continued to exact the commissions ordered by the Secretary to be discontinued and some of them instituted suits in the Federal courts to restrain the United States attorneys from prosecuting them for failure to so discontinue.

Temporary restraining orders were granted by the courts, and dates set for the Government to be heard. At the hearings in Chicago and Kansas City the department cooperated with the United States attorneys in the argument of the legal questions involved, and the whole matter is now before the courts for determination. Decisions are looked for soon.

At Kansas City, under order of the court, the commission men are depositing with the clerk of the court, to abide the result of the litigation, all receipts by them which represent the difference between the commissions which the Secretary ordered to be discontinued and those which the Secretary found to be just, reasonable, nondiscriminatory, and fair.

A like practice is being followed at Omaha and East St. Louis.

HOG-CHOLERA LOSS REDUCED BY TEACHING USE OF SERUM

Losses by hog cholera have been materially reduced in Bullock County, Ala., as a result of the work of the county agent in training farmers in various centers throughout the county to use the serum and apparatus developed by the department. Forty-nine cars of hogs, 3,928 head, have been marketed from the county through cooperative work, with an estimated saving of $6,000. In Houston County the department's representative taught 18 men to vaccinate hogs. Six sets of instruments owned by the Dothan Rotary Club were supplied to the demonstrators and a serum-distributing point was established in charge of a reliable veterinarian. More than 9,000 head of hogs were treated. In many cases it was found that sickness, other than cholera, was due to some incidental cause, such as bad peanut meal, and balanced rations were advised. The county agent's work resulted in 32 farmers establishing pastures to keep their hogs off the open range, the land thus pastured being freed of many noxious weeds by the rooting of the animals, and prepared for future cultivation. Forty-four farmers in the county were interested in stump removing, and about 2,000 acres of land was cleared in this movement. About 5 tons of dynamite was bought for the purpose largely on the cooperative plan.

BETTER TO BUILD UP CHEAP ROADS BY CONSTANT CARE

It is better to build a cheap road and keep it in good condition by adequate maintenance than to build the most expensive highway and permit it to deteriorate for want of care, say officials of the Bureau of Public Roads of the United States Department of Agriculture.

Maryland, which has one of the finest systems of improved highways in the United States, if not the best, has consistently followed this practice. The originally improved roads in Maryland were comparatively inexpensive, costing only what the taxpayers were willing to pay for. The first few years the average cost was less than $10,000 a mile. In some cases the work entailed considerable grading and drainage, but in others it amounted simply to resurfacing the old turnpikes, which had already been graded and drained.

Generally the roads built at that time were macadam, 12 feet wide and 6 inches thick. Soon the width was increased to 14 feet. Later many were widened still farther, some very successfully, by adding concrete shoulders on each side of the existing macadam. This method of improving roads makes it possible for traffic to continue unimpeded on the road while the work is going on.

The macadam roads in Maryland have given very good satisfaction, but continuous care has been largely responsible for their success. The roads are constantly patrolled and no hole of any size is allowed to go unrepaired. Material for patching is kept at convenient points along the road for the use of the patrolman. From a relatively small investment in admittedly low-type road it builds up a better one from year to year, always conserving the bulk of the previous investment.

AIDED NORTHWEST FARMERS TO INCREASE ALFALFA CROPS

Farmers in Oregon and Washington have greatly increased their alfalfa crops by the application of sulphur. This practice is based upon the results of investigations by the experiment stations in these States as well as of demonstrations of the use of sulphur on alfalfa conducted by the county agricultural agents in cooperation with specialists from the agricultural college. In Deschute County last year 285 tons of sulphur were used, at a total cost of a little more than $14,000, and the increased yield, reckoned at $20 a ton, was $120,000. In Jackson County 277 tons, costing about $13,000, are estimated to have increased the yield $110,000. In Klamath County 98 tons, costing $5,400, gave an estimated increase of $40,000, reckoning alfalfa at $15 a ton. Demonstrations in Josephine, Wallowa, and Wasco Counties give a similar ratio of results. The first experiments in sulphur fertilization in these States were made in 1912. Rapid development of the innovation was made possible through the system of county agents and key men who were practical farmers.

Muskrat farming has given formerly worthless Maryland marshland a value of $30 to $40 an acre, the United States Department of Agriculture finds. In addition to the hides the carcasses are sold at 25 to 30 cents apiece for meat. They are considered a delicacy in some hotels.

DIAGNOSING A HURRICANE

By C. F. Marvin, Chief, Weather Bureau, U. S. Department of Agriculture.

The hurricane that hit the coast of Louisiana in the early morning of September 21 was the first that has occurred this year and makes the work of the Weather Bureau in connection with these disastrous storms of timely interest. Fortunately, this one was of comparatively moderate intensity and struck at a point where no large city is located and not largely populated. However, the violence of even a moderate hurricane is terrorizing and can be fully appreciated only by those who have experienced their destructive power. They are always of tropical origin and occur in the summer and autumn months. Those that originate in the Caribbean Sea and Gulf of Mexico are called hurricanes, and have the same characteristics as the dreaded typhoons of the Philippines. They are by far the most violent of all storms and are attended by clouds of inky blackness, downpours of rain, and wind of tremendous velocity, sometimes more than 135 miles an hour. In low-lying sections the high winds pile up the tides many feet and inundate the country for miles inshore. The hurricane of 1915 that passed near Galveston left a large ocean-going vessel high and dry a long distance inland.

Effect Would Be Appalling.

If a hurricane should strike on the south Atlantic or Gulf coasts unheralded the loss of life and destruction of property would be appalling. And this is what did happen before the Weather Bureau began its hurricane warning service and had learned the nature and characteristics of these awful maelstroms. For many years no tropical storm has occurred unannounced, and the saving in vessels and property undoubtedly amounts to millions of dollars, and the saving of lives can be reckoned in hundreds of thousands.

The detection of the beginning of hurricanes, their intensity, speed and direction of movement requires marvelous skill on the part of the forecaster. It can be compared to a physician who diagnoses a case in which there is menace of death to his patient by inconspicuous symptoms that he recognizes because of his technical skill and experience. If he makes a mistake, one person may die; if the forecaster errs, thousands of lives may be the penalty. The forecaster has less than the physician on which to base his diagnosis, oftentimes a single wireless report of weather conditions from a vessel at sea, or a land station a hundred miles or more from the storm center. His task is made more difficult because hurricanes may, and most frequently do, originate over the tropical waters of the Caribbean Sea and move for days without coming near land. A vessel caught unawares is in for a terrible buffeting and is lucky to escape.

Recent Hurricane Typical.

The recent hurricane was typical of the forecaster's problem. As early as September 18 he announced that conditions were becoming threatening over the Caribbean Sea and the west portion of the Gulf of Mexico, and advised caution on the part of all vessels in those waters. It was a case of diagnosis. The caution was sent broadcast by wireless and placed vessel masters on the alert. The next morning the symptoms had developed and it was evident that there was a real disturbance moving toward the Yucatan Channel. It might keep a straight course, move to the right or the left, or describe a parabolic curve and strike anywhere on a fifteen hundred mile coast line from western Florida to southern Texas. For 60 hours, with only a few reports, none closer than 100 miles from the center of the disturbance, as a guide, the forecaster kept the people of the entire Gulf coast, who were in a fever of anxiety, in touch with the situation. When it finally struck, those in the danger zone were prepared, while hours before those in the other threatened districts had been relieved of their anxiety. The forecaster had diagnosed the case accurately. Like the physician, he spent many sleepless hours beside his charts and took only short periods of rest until the danger had passed.

PEANUT BUTTER A GOOD FOOD; RICH IN PROTEIN AND FAT

Peanut butter, many people think, is good only for sandwich filling or for spreading on crackers and bread. It can, however, be used in a number of dishes that are cheap, easy to make, and very wholesome, according to home economics specialists of the United States Department of Agriculture. Moreover these dishes have the rich flavor of the peanut without the pasty texture of the butter.

Food experts have known for a long time that peanuts were rich in protein and fat, two things that the body needs. Within the last few years these scientists have also learned that there are many kinds of protein and that only those which supply everything needed to make body protein can be called perfect or complete. These complete proteins are found in eggs, milk, and meat. While the protein of peanuts is not complete in itself, it becomes so when combined with that of wheat. For this reason peanuts and wheat eaten together, even in a dessert, reduce the amount of meat actually needed.

Peanut butter, in spite of its name, is just finely-ground peanuts to which salt has been added, and particularly when ground at home or bought in bulk, is one of the cheapest foods on the market at present, considering what it furnishes.

Peanut butter can easily be made at home by putting through a food grinder fresh roasted peanuts from which the red skins have been removed. Salt can generally be mixed in more thoroughly if added to the nuts before they are ground. The machine should be adjusted to grind as fine as possible. If the butter is not fine enough after one grinding, it may be put through the machine a second time. Many stores are now grinding peanut butter of excellent quality on their own premises, and there are also many good commercial brands.

STORING LATE VEGETABLES.

The storing of late vegetables is often profitable for those who grow them in sufficient quantities for marketing, giving the grower the direct benefit of the winter price. To care for the surplus vegetables in many cases requires nothing more than the use of existing facilities in or near the home. When considerable quantities of vegetables are to be stored, it is frequently advisable to construct permanent storage facilities in the form of a storage room in the basement of a dwelling or under an outbuilding, or to build an outdoor cellar of wood or masonry. If permanent facilities are not available, late root crops can be kept in outdoor pits or banks, requiring no cash outlay except the labor.

The United States Department of Agriculture finds hairy vetch the best winter legume for all localities in the eastern half of the United States where red clover fails or where crimson clover is not a success. Vetches make excellent feed, either green or as hay, and are also exceedingly useful as cover and green-manure crops.

Many Valuable Bulls Lost to Dairy World—Slaughtered When Keepers Can't Boss 'Em

"Far too many valuable bulls are being lost to the dairy world because they become ugly or dangerous to handle," remarked an agent of the Dairy Division, United States Department of Agriculture, who recently returned from a field trip.

It is true that bulls are dangerous, especially the older ones, and none of them should be trusted; but it is not until a bull has reached full maturity, with the resulting size and temperament which make him hard to handle, that his worth as a sire can be proved. Selling bulls as soon as they begin to lose the gentleness of immaturity simply means that breeders must forever rely on untried sires, and it is merely a matter of luck whether the resulting offspring is good or not.

A Characteristic Quality.

"Dangerous as a mad bull" is a proverb. Yet it must be remembered that such madness is a characteristic quality of bulls. Not only some bulls, but all bulls, are subject to outbursts of violence from time to time. These do not necessarily signify either craziness or anger on the part of the bulls, but often simply the aggressiveness which indicates vigor and good health. What is called ugliness, therefore, may be mere playfulness.

On the other hand, sometimes a bull may become really ugly, showing a desire to fight and destroy. But whether the animal's behavior is due to playfulness or bad temper makes no difference. In either case the bull should not be trusted, but a proper pen will make it unnecessary to lose a valuable bull by selling him for beef simply because of his refractory conduct. This character merely means that the bull should be kept and handled in such a way that the owner (or keeper, if it is in a bull association) is not exposed to attack. This object can be attained by keeping the animal in the right sort of house and pen.

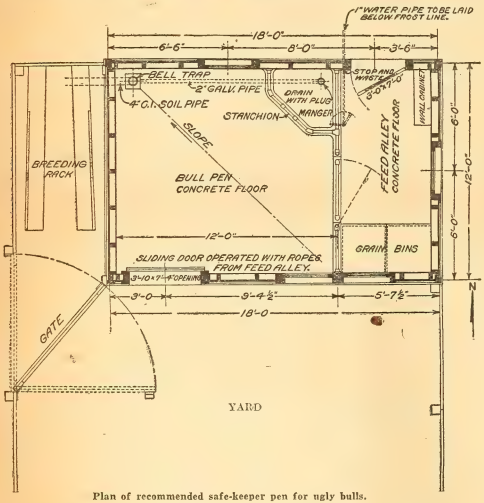
Such a pen has recently been devised and described by specialists of the Dairy Division. Fear of ugly bulls has been one difficulty which organizers of bull associations have met with in their work, and the same fear on the part of individual owners has led to the slaughter and loss of great numbers of excellent sires. In view of these facts it has been recognized that it is needful to have a pen which will make it easy and reasonably safe for the breeder to keep and care for the fiercest bull by avoiding the necessity of coming into contact with the animal without the protection of a fence.

It is always unsafe to count upon the good disposition of any bull whatever. No bull is to be trusted. The pen which has been devised, however, lessens the danger to such an extent that the question whether a bull should be kept in service may be decided on the ground of his value as a sire, and not with reference to whether he is good natured or ugly.

Essential Features.

The essential features of the plan are (1) to feed and water the bull without entering his stall; (2) to have a large yard for him to exercise in, built so that he can not break out, but of easy exit for anyone going into the yard; and (3) to have an adjustable gate, by means of which the bull can be turned into his exercise yard, into the breeding stall, or into the stable, and held there at the keeper's will, without the keeper having to enter the inclosure. Then, when the bull is let out into the yard, he can be shut out there while his stable is cleaned. When a cow is placed in the breeding stall, the handling of the bull can all be done from the outside, where the keeper is entirely safe. If it is deemed desirable to keep the bull in one end of the cow stable during the winter, the specially constructed yard can be built on the outside of the cow stable.

This style of bull pen keeps the keeper safe. It also keeps the bull safe from the butcher. Plans for the safe-keeper pen will be supplied by the Dairy Division, United States Department of Agriculture, Washington, D. C., to those who have bulls in charge. Factors of safety in fencing the yard are also pointed out in connection with these plans.



Plan of recommended safe-keeper pen for ugly bulls.

Lespedeza, also common known as Japan clover, is one of the most valuable forage crops for the southeastern part of the United States. Except on alluvial bottom lands, it rarely makes sufficient growth to justify being cut for hay; nevertheless its widespread adaptation to grazing conditions gives it a value that is difficult to estimate. Being a legume, it is valuable for soil improvement, and also it is relished by all classes of live stock. The United States Department of Agriculture has a new Farmers' Bulletin, No. 1143, on lespedeza as a forage crop.

Buy Turpentine on Specification and Test—Variety of Practices Now Used by Buyers

Need for uniform specifications and methods of testing in the purchase of turpentine is shown by the following extracts from United States Department of Agriculture Bulletin 898, prepared by the Bureau of Chemistry:

It is the universal experience that definite specifications are necessary in the purchase of all materials which are easily and profitably adulterated. They are essential to protect the buyer against delivery of low-grade materials and to protect the seller against competition with venders of low-priced articles.

Details of Tests Lacking.

The specifications upon which turpentine is bought and sold in the primary naval-stores markets of the country are those implied or stated in the several State laws and in the rules and regulations of the boards of trade and chambers of commerce of the primary markets. The requirements are that the turpentine shall be pure, and standard or better in color. No details as to what tests shall be applied to determine purity or color are laid down, nor are methods of conducting the tests described. Specifications have been adopted by many Government departments which embrace the recognized requirements which determine whether or not a turpentine is pure, and describe in detail the methods of making the required tests. Methods for the correct sampling of the turpentine are given also. Needless to say, it requires much more space to describe these things clearly than simply to state that "the turpentine shall be pure, and standard or better in color," which can only be determined by the intelligent and accurate use of the procedures described in detail in the specifications.

Large buyers of turpentine, such as paint and varnish makers, the several Government departments, and State and city purchasing agents, have for years bought turpentine on specifications which have been more or less specific and detailed. Rarely, however, have any two sets of specifications or the methods of testing of different buyers been identical, while too frequently the methods of testing have been seriously erroneous. The Government specifications have been prepared as a guide in the purchase of turpentine by one of the largest users of turpentine—the Federal Government in all its branches. The United States Department of Agriculture has furnished much of the data on which the specifications are based, and has taken the active part in formulating them. The specifications are suitable for and applicable to all turpentine designed for the purposes for which it is usually employed, such as paint and varnish thinner, in polishes, pharmaceuticals, calico printing, etc., and are issued for the information of the turpentine producing and consuming industries.

FARMERS MIX OWN FERTILIZER.

Farmers in Morgan County, Ala., have saved approximately $10 a ton by mixing their fertilizer at home under the direction of the county agent instead of shipping in the ready mixed article. About 300 farmers have joined the homemade fertilizer movement. Ten farmers joined in buying a carload of ground limestone which was used with good results, and a number have been testing nitrate of soda on corn and cotton. The factory mixed commercial fertilizer has cost $40 to $60 a ton, and the price placed a limit on its use which has been largely relieved by the practice of home mixing. In Bullock County 10 central communities have engaged in cooperative buying of commercial fertilizer and ingredients for home-mixed fertilizer.

LITTER OF PIGS PRODUCED COLLEGE EDUCATION FOR BOY

Here is the story of how a litter of pigs produced an agricultural college education, a system of farm waterworks, and general improvement on a backwoods farm that had only primitive advantages.

The education went to Jeff Anderson, a Kentucky boy of Pulaski County. Jeff belonged to a boys' club which had been organized by the county agent. He was encouraged to raise a litter of fine pigs under the club system by which the boys applied approved methods and kept account of the results. The pigs sold for a fancy price. Jeff, who had made sure progress, saved some money from his labor, and in 1918 entered the Kentucky State College of Agriculture for its short course.

He had been used to seeing his mother and other women carry water 150 yards up a hill for washing and cooking. At the agricultural college he realized the convenience and benefit to be gained by running water conducted to a tap in the kitchen. When he returned home he persuaded his father to let him put in a water system. A stand pipe 60 feet high was built with a 500-gallon tank on top, which gave sufficient pressure to force water to the dwelling 400 feet away. He rigged up a gasoline engine and pump at the spring under the hill. He had learned a little about plumbing, so he did all the pipe fitting in the house. One month's work at odd times coupled with a little of the knowledge he had gained at the State college of agriculture put the water right into the kitchen. Jeff has gone back to complete his college education; and they're still raising better pigs at the Anderson farm.

KEEP BROOD SOWS IN WINTER AS CHEAPLY AS POSSIBLE

During the winter the brood sows should be maintained as cheaply as possible, but at the same time they must be properly fed in order to farrow a large number of healthy, well-grown pigs in the spring. Best results are obtained when sufficient food is given to produce daily gains on the sows of one-half or three-fourths of a pound. To do this the grain feed must be limited, and diluted with some roughage, for unless the ration has sufficient bulk, the sows will become constipated and hungry, due to the undistended condition of the digestive tract. Legume hays are the chief roughages available at this season, and their use will cheapen the cost of feeding.

Either alfalfa, clover, soy-bean, or cowpea hay makes an excellent roughage, and when fed, little or no high-priced protein concentrate is needed to balance the corn. Bright, leafy alfalfa hay gives the best results of any of these roughages. Alfalfa meal is simply the best grade of alfalfa hay chopped into a meal. Clover hay contains almost as much nourishment as alfalfa hay, and soy-bean hay, cut and cured when the beans are almost ripe, is a very nutritious feed. Cowpea hay should be cut when the first peas are ripening and consequently does not have as high food value as soy-bean hay. Great care must be exercised in curing soy-bean and cowpea hay, for the stalks are very heavy and succulent and unless thoroughly dried are apt to mold. Under no condition should a brood sow be fed upon any roughage which is not bright, nutritious, and free from smut or mold. She does not relish or thrive on such inferior feed. It is very apt to cause severe digestive troubles and may lead to the loss of her litter.

Milo Proves Welcome Immigrant to U. S.—Selection Has Eliminated Early Faults

Milo, the sorghum grain crop which was introduced into this country—probably from Africa—about 1880, has come to stay. The Bureau of Plant Industry, United States Department of Agriculture, advances the statement that milo produces better yields than any other grain sorghum in those sections of the sorghum belt where the rainfall is low and the altitude high. So definite is its adaptation to these conditions that milo sowing has practically ceased in South Carolina and Georgia, where it was first introduced, and is now confined to the Southern Great Plains area and the far Southwest. Here moisture and altitude give the grain a better environment. Here, also, milo furnishes an essential grain crop under conditions too severe for corn. Its use is limited to the South and Southwest.

Selection Eliminated Faults.

The usefulness of the improved milo with its short, single stem and its single, erect, heavy head is well appreciated. As introduced, milo failed in many desirable points; the stems were of unequal height, and the heads were partly erect, partly leaning, and partly hanging or goose-necked. Selection has eliminated most of these faults and there is little physical resemblance between the original type and the improved one.

In 1899, about 25,000 acres of milo were grown in this country, and the crop was worth $200,000, but in 1918 a crop of 1,205,000 acres was grown, and the yield that year was valued at $21,300,000. No better testimonial need be offered. At a Department of Agriculture field station in the Texas Panhandle, Standard milo, over an 11-year period, gave an average yield of 20 bushels to the acre. The Dwarf variety, at the same station and for the same period, yielded 24 bushels to the acre.

Chemical analysis shows that milo grain contains 9.31 per cent water; 1.61 per cent ash; 1.99 per cent nitrogen; 12.49 per cent protein; 71.88 per cent carbohydrates; 3.22 per cent fat; and 1.48 per cent fiber. For purposes of comparison the average content of dent corn follows: 10.60 per cent of water; 1.50 per cent of ash; 10.30 per cent of protein; 70.40 per cent of carbohydrates; 5 per cent of fat; and 2.20 per cent of fiber.

Milo is seen to have a higher protein and carbohydrate content than corn, but its fat percentage is lower. As fat is the most valuable part of the grain for fattening stock it is apparent that milo falls a trifle below corn for this purpose. Experts agree that milo has about 90 per cent of the feeding value of corn. As food for humans, it is about equal to corn.

Cutting Off the Heads.

Where the planting is small the common method of harvesting is to cut off the heads with a knife and toss them into a wagon. The heads are then cured by piling in windrows or—a better method—by putting them into well-ventilated bins. A corn binder which cuts and binds the stalks can be used, or the milo may be harvested with a grain header.

The grain is larger and softer than wheat. It is thrashed as wheat is thrashed but with the cylinders revolving at only two-thirds the speed used for wheat, and sometimes with fewer teeth in cylinder and concaves. These precautions are necessary, says Farmers' Bulletin 1147, to prevent the milo grains from cracking.

Ground milo heads (head chops) or the ground grain (milo chops) is fed to cattle, sheep, hogs, and poultry as corn is fed. It is also fed in the bundle as roughage. For most purposes it should be cracked or ground and should be balanced with other feeds rich in protein, alfalfa, clover, cottonseed meal, or the like.

The bulletin gives full directions for growing, harvesting, and curing this valuable grain.

OUTLAY FOR RURAL ROADS AND BRIDGES INCREASES

During the calendar year 1919, 46 States of the Union expended over $400,000,000 on their rural roads and bridges, the Bureau of Public Roads of the United States Department of Agriculture recently announced. This total is made up of the actual cash expenditures for such items as labor, materials, supervision, and administration, amounting to $339,455,931, and convict labor and statute labor, the value of which, not definitely known, is estimated at about $132,000,000. So far as possible, all expenditures on city streets within incorporated towns and cities and all items of sinking-fund payments or the redemption and interest payments on road and bridge bonds have been excluded.

The road and bridge expenditures for 1919 show an increase of approximately 33½ per cent over those of 1918 and 70 per cent over those of 1914. More striking, however, is the increase in the proportion of the total funds supervised by the several State highway departments. In 1918 the expenditures by or under the supervision of the State highway departments amounted to $117,285,268, while the local road funds, over which they exercised no control whatever, amounted to $168,812,925. In 1919, however, the State highway departments supervised the expenditure of $200,292,694 as against the total of $189,163,237 expended by the local road and bridge authorities.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended November 13, 1920:

Sugar Beet Growing Under Humid Conditions (Revised)—Farmers' Bulletin 568.

Grain Sorghums How to Grow Them—Farmers' Bulletin 1137.

Proso or Hog Millet—Farmers' Bulletin 1162.

Tree Surgery—Farmers' Bulletin 1178.

Varietal Experiments with Spring Wheat on the Northern Great Plains. (Professional paper)—Department Bulletin No. 878.

Turpentine—Its Sources, Properties, Uses, Transportation and Marketing—Department Bulletin No. 898.

Fumigation of Citrus Plants With Hydrocyanic Acid: Conditions Influencing Injury—Department Bulletin No. 907.

Sugar-Cane Juice Clarification for Sirup Manufacture—Department Bulletin No. 921.

Potato Wart—Department Circular 111.

Cooperative Relations in Agricultural Development—Address of E. T. Meredith, Secretary of Agriculture, before the Land-Grant College Association, Springfield, Mass., October 20, 1920—Office of the Secretary, Circular 153.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1137; Department Bulletin No. 863; Department Circular 111.

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Weekly News Letter

Published by the
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COMPLETES 4-YEAR TEST ON COSTS OF CATTLE FEEDING

No Fast Rule Can Be Set When to Buy Stockers and Feeders.

Steers Fed on Winter Ration of Corn, Silage, and Cottonseed Meal Made Greatest Gain—This Ration Found Also to Be Cheapest—Details of Experiments.

No hard and fast rule can be set as to the time to buy stockers and feeders, say specialists of the United States Department of Agriculture. The usual time, however, is in the fall, when they must leave the grazing areas and go where feeds have been harvested or stored for cattle feeding. In the spring, when everyone with grass for grazing wants them, cattle are higher than in the fall, usually enough higher to pay for the wintering. However, with a falling market, which no one can foretell with any degree of certainty, the cattle may not be worth enough more in the spring to pay for the winter feeding. Yet they have been kept largely on feed for which there is no other market.

Details of the Tests.

Consequently, cattlemen should know how much it costs to keep stockers through the winter on various rations, how they lose or gain weight, and how they gain through the summer as a result of the way they have been wintered. Being in a better position to carry on feeding experiments to answer these questions than the cattlemen, the Bureau of Animal Industry, cooperating with the West Virginia Experiment Station, conducted a series of feeding tests in Greenbrier County, W. Va. The experiments began December 22, 1914, and covered a period of four years, the results being now published in Department Bulletin 870.

In brief, 30 yearling steers were selected each year and divided into three lots of 10 steers each. When the lots were carefully equalized the average weight of the animals was 663 pounds each. The steers were on winter rations an average of 130 days, and on pasture an average of 158 days each year.

Keeping Steers Without Loss.

The tests proved that an average daily ration of 19.8 pounds of silage, 5 pounds of mixed hay, and 2.5 pounds of wheat straw during the winter would maintain these steers without loss of weight.

An average daily ration of 23.1 pounds of corn silage, 4.9 pounds of wheat straw, and 1 pound of cottonseed meal would give each steer an average gain of 62 pounds.

FARM LABOR TREND SHOWN.

There was a net decrease of 60,000 in the number of men and boys over 15 years of age working on Ohio farms for the year ending in June this year, according to a survey made by the agricultural statistician for the Bureau of Crop Estimates, United States Department of Agriculture, and the State Bureau of Agricultural Statistics. The survey covered from 100 to 300 farms in every county in the State, selected at random. The report further shows that for every man who returned to farm life during the year seven left the farm for other employment.

A daily ration of 11.9 pounds of mixed hay and 4.1 pounds of wheat straw fed throughout the winter will not keep the animal in good condition. This ration was responsible for a loss of 35 pounds per steer. Corn silage gave better results than dry roughage alone, and the steers that had silage as a part of their winter ration made greater total gains than those fed on hay and straw.

The cost of feed averaged throughout the four years was as follows:

Corn silage	$6.00
Mixed hay	18.00
Rye hay	18.00
Soy-bean hay	17.00
Wheat straw	7.00
Cottonseed meal	50.00

(*Continued on page 8.*)

FARMERS FIND ADVANTAGES IN COOPERATIVE MARKETING

Overcomes Many of the Difficulties of Selling Products.

Most Effective Local Organizations Found Where Necessity Drew Farmers Together—Loyalty to Association Necessary for Success—Good Manager Important.

The success or failure of a farm depends almost entirely upon the results obtained in marketing the products grown. Experience has proved that the farmer who undertakes to market his products through speculators or who attempts to ship and market them in some very distant market is laboring under a great disadvantage.

Marketing is a specialized function and is really the most serious problem confronting the farmer to-day, and the rank and file of farmers are not equipped to perform this service for themselves in a satisfactory manner. Many difficulties encountered in marketing farm crops have been overcome through the organization and operation of farmers' cooperative marketing associations. Cooperative marketing has passed the experimental stage, and the 14,000 or more examples of successful organizations in operation in this country offer positive proof that the principles of cooperative marketing are fundamentally sound and practical.

Confine Their Efforts.

The most successful cooperative organizations confine their efforts to the shipping and marketing of certain specialized products, such as citrus fruit, apples, peaches, potatoes, melons, poultry and eggs, dairy products, live stock, tobacco, and grain. The substantial growth of cooperative marketing activities in this country is perhaps best illustrated by the fact that the aggregate volume of business done in a single year through cooperative associations and exchanges

runs up into the hundreds of millions of dollars.

The handling of farm crops by groups of farmers through central associations and exchanges offers many advantages, such as the improvement and standardization of grading and packing; the obtaining and use of reliable crop and market information; the intelligent development of permanent markets; the effecting of savings through the collective sale of farm products and purchase of farm supplies; the proper financing of all activities, including the building of warehouses, the preparation of crops for market, and their movement to the markets; and the employment of trained and efficient business and sales management.

An organization founded on dire need with a well-defined purpose has the best chances of success. Farmers who are satisfied with the results obtained without an organization do not feel a need for an association. Necessity for an organization may arise from the lack of marketing facilities, or from dissatisfaction with existing agencies. When a cooperative marketing association is under consideration it is advisable to have a preliminary survey made by competent local people or by experienced cooperative organization specialists from the United States Department of Agriculture, whose advice and services are available upon request. In making such a survey care should be taken to ascertain the need for an organization, the attitude of the farmers toward such an undertaking, and the approximate development of business available. If such interest is evident and other conditions appear favorable for an organization, a meeting of the interested parties should be held and by-laws containing a definite working plan should be adopted.

Should Have Legal Standing.

This plan should prescribe the objects of the association, whether it is to be of stock or nonstock form, the method of financing, the duties and powers of the officers and members, and the general plan of operation. It is advisable to incorporate in the plan definite methods of handling the members' products, systems of pooling the results and making returns for products sold. A cooperative association should be incorporated in order to give it the proper legal standing.

In most instances contracts between the members and the association, whereby they agree to market certain products through it, are of vital importance. This is especially true in the case of associations handling perishable products. Contracts promote loyalty and protect loyal members and the organization. Loyalty on the part of the members is essential to the success of an organization. Disloyalty has caused the failure of more than one cooperative organization. Strong men should be selected for officers of the association, and men who will cultivate loyalty and inspire confidence.

The manager is the keystone of the organization. His selection is of the utmost importance. He should be experienced in marketing the line of products intrusted to his care; he should possess tact and good judgment, and be honest and above suspicion. The success of the organization depends upon his ability to meet the members and the trade with which the organization deals, and to retain their confidence. He should possess the proper qualifications for the position; he should be given broad powers and the hearty support of the members in his work, together with a salary that will attract ability and be commensurate with the services expected of him.

Ready to Give Aid.

It may be of interest to know that the Bureau of Markets of the United States Department of Agriculture maintains a staff of experienced organization men whose duties are to assist producers of all farm, dairy, and orchard crops in the organization of sound, substantial cooperative shipping and marketing associations and exchanges. Assistance is given in the preparation of organization plans, methods of financing are suggested, and practical advice given in the matter of operating such enterprises. The advice and services of these men are at the disposal of the farmers.

Hail Insurance Shows Steady Increase—Fills a Much Felt Need Among Farmers

Hail insurance is a form of crop insurance that in recent years has attained considerable importance, especially in the Great Plains States, where the hail risk is comparatively great. According to Department Bulletin 912 on hail insurance, just issued by the United States Department of Agriculture, the hail risks in force have increased in the past 20 years from about $25,000,000 to over $550,000,000.

Different from Fire Risk.

It appears that in the early days of hail insurance, little information existed as to the nature of the hail hazard and its relative severity in different localities. Many of the early hail mutuals were patterned after the local farmers' mutual fire insurance companies, without an adequate recognition of the radical difference between the fire hazard on the farm and the hail hazard. Unlike fire, a hailstorm seldom strikes one farm only, but usually cuts a swath through many farms in the same locality. Thus the company that insures against hail in a limited territory stands to suffer very heavy losses at intervals, while the company that insures against fire in the open country is likely to have its losses more evenly distributed.

Failure to understand this essential difference between hail and fire insurance resulted disastrously to many of the earlier hail insurance mutuals. In spite of many failures, however, this class of insurance has made a steady growth, a growth which the department specialists in insurance attribute "to the need for such insurance on the part of farmers rather than to any general success on the part of the mutuals offering protection."

Department specialists urge that farmers who may be contemplating the organization, either of a mutual or of a joint-stock company to handle hail insurance, take into consideration the danger of operating in a limited territory, where a single storm may in an hour cause losses that cannot possibly be met in full. General experience has been, it is pointed out, that whenever it has been necessary to prorate losses the membership of mutuals has fallen off in the year following such action. The management of the company is almost invariably blamed for failure to settle in full, regardless of the facts in the case. Many companies have failed to survive the prorating of losses even when managed by men whose integrity was unquestioned among those who knew them personally.

Five States, North and South Dakota, Montana, Nebraska, and Oklahoma, now have State hail insurance. In most instances premiums on State hail insurance are collected very much as are taxes. The premiums are generally scaled according to the prevalence of hail in the different districts covered.

CITY HAY MARKETS DEMAND PROPER GRADING AND BALING

Production and Consumption in United States Has Shown Steady Increase.

Marketing of Hay Has Become a More Exacting Process—Producer Should Know Requirements of Market He Ships to—Should Send Best to City.

In the face of a marvelous increase in motor-propelled vehicles, which eat only gasoline, it is worthy of note that the production and consumption of hay in the United States has increased steadily year by year, reaching its highest point in history in 1919. This year's yield will be only slightly less.

At the same time, the marketing of hay has become a more particular undertaking. Formerly nearly all hay was sold within 30 miles of the place where it was grown. Now a large part of it is shipped by rail and some exported.

Two Kinds of Markets.

Market hay may be divided into two general classes: City market hay and local, or country, market hay. The line of distinction between the two classes is not always distinctly drawn, but it may be said that the demand in regard to quality and better grades is more rigid in the city than on the local market. It requires a better quality of hay to grade as No. 1 on the city market than on the local market.

Compared with marketing hay in the city, disposing of it in the country is a comparatively simple matter. On the local market the producer usually comes in direct contact with the consumer, and hay is not sold according to its official grade, but on its merit. It is designated as "choice," "good bright hay," "fair," "medium," etc. This includes all kinds of hay, and hence there is no necessity for the producer to know the commercial grades.

When hay is shipped to the city market, however, the grade given by the shipper is of the utmost importance. The prices of the different grades of hay depend, in years of normal yield, on the demand of city consumers, who may be divided into three general classes according to the kind of hay they feed. In the first class are the drivers of fancy driving and saddle horses, who feed the highest quality hay. Such horses must be kept in the best condition, and as No. 1 hay is very palatable and agrees with the horses, it is used to furnish the required bulk of the ration rather than the quality of nutritive substances it contains. High-grade hay always finds a ready sale, for the demand usually exceeds the supply.

The second class of consumers avoid extremes in both price and grade and feed the medium grades of hay. In the eastern part of the United States No. 1 and No. 2 timothy are fed in preference to the other grades and are cheaper. Consumers of this kind are beginning to use mixed (timothy and clover hay) and legume hay, especially alfalfa, in preference to unmixed grass hay.

The third class feed the lower grades, such as No. 3 timothy and "no grade." This hay is fed by many horse owners because it is cheap, and by owners of transient and sale stables who want something to fill up the horses and are not greatly concerned with the nutritive quality of the feed. Experienced horse owners know that when poor hay is fed it requires a larger grain ration than where better grade hay is used. The quantity of poor hay in the market is much greater than that of good hay.

Hay Should Be Well Baled.

Most hay for city market nowadays is baled, and each year there is considerable loss in marketing hay on account of improper baling. The rules by which market hay is graded require that it be "sound and well baled." Properly baled hay consists of bales of uniform size, having straight edges, square ends, the proper number of wires accurately placed, and baled in such a manner as to stand handling and shipping well. Each bale should contain only one grade of hay, composed of enough folds to be torn apart easily when the wires are removed.

The size and weight of the bales are important in most markets. The producer should know the demands of the market to which his hay is to be shipped. Usually a man ships his hay into one general market where the size and weight of bale is uniform.

The small bale, up to 100 pounds, is much in demand, because one man can load, unload, and deliver it. This size is popular for handling where shipments are by river boat in the South. For southern retail trade a bale not more than 70 pounds—approximately 30 to the ton—is popular. In several eastern markets the large upright bale weighing from 200 to 225 pounds is preferred.

The producer should select his best hay for the city market, grade it carefully, bale it according to the market, and avoid shipping more than one class of hay in the same car.

NEGROES SEE MOVIES.

Colored people of York, S. C., were given their first view of a motion picture last month, through the film-distribution work of the United States Department of Agriculture. Films graphically illustrating lessons in efficient agriculture were sent to a local exhibitor, as they were to other centers throughout the United States, and were shown on an outdoor screen, so that both white and colored people could attend the exhibitions. One of the films now in preparation illustrates the methods used and the effect of the calcium arsenate campaign being carried on against the cotton boll weevil.

INSPECT SOURCES OF TABLE AND MEDICINAL WATERS

The annual fall inspection of springs and wells used as sources of medicinal and table waters is being made by the Bureau of Chemistry of the United States Department of Agriculture. One specialist has already covered the territory from Maine to Missouri and has visited 50 springs. Another is still out; when he finishes his work practically all sources from which water is sold in interstate shipments will have been studied.

Under the provisions of the food and drugs act, water for use as a beverage or for medicinal purposes comes under the regulatory supervision of the Department of Agriculture, if the water is sold outside the boundaries of the State in which the spring is located.

The department does not content itself with the analysis of samples sent in by its agents; it believes that a far more efficient protection is afforded if the water is also tested at its source. This reduces the laboratory work and affords an opportunity for specialists to conduct educational work where the conditions seem to warrant. It is extremely difficult for the layman to determine the wholesome qualities of water. Water that is clear, cold, and sparkling may be dangerously polluted, while water that is brown and repulsive in appearance may be of high sanitary quality. Impure bottled water may result from the use of dirty bottles or unclean methods of handling the water. These are faults that may be easily corrected. In other instances, particularly where a health resort or village has been built around the springs and wells, it may be necessary to rebuild and reorganize the entire sewerage system of a town. In either case the specialist advises the interested parties and outlines what must be done. If later he finds that insanitary conditions still prevail the power of the Federal food and drugs act is invoked and the owner of the spring is compelled to remedy conditions.

Weekly News Letter

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UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS
John L. Cobbs, Jr., Chief

PRESS SERVICE
Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

HARLAN SMITH APPOINTED DIRECTOR OF INFORMATION

Secretary of Agriculture Meredith has announced the appointment of Harlan Smith as director of information, to succeed E. B. Reid, who recently resigned to become editor of a farm paper. Mr. Smith is promoted from the position of chief of the division of publications, in which capacity he is succeeded by John L. Cobbs, jr., who for some time has been in charge of the information work of the Forest Service. The changes became effective November 16.

USE LIGHT DISCOVERY TO AID CHRISTMAS-PLANT GROWTH

To get poinsettias ready for the market by Christmas is a problem that has worried florists ever since the bright red flowerlike leaves of this beautiful plant took their place as a favorite holiday decoration.

The problem has been reduced to a practical solution through the work of Dr. W. W. Garner, tobacco specialist, and H. H. Allard, plant physiologist of the United States Department of Agriculture, who discovered the possibility of advancing or retarding the growth of plants by controlling the period of light each day. Where the light period is shortened the plants reach maturity much sooner than where they are given the natural length of day. In the greenhouses on the department's experimental farm at Arlington, Va., it has been found possible to bring poinsettias into full form as early as August by shortening the daily exposure to lights.

In fact, department specialists are confident that there is practically no limit to the extent to which the Garner-Allard discovery may be applied in the ordinary florist establishment in bringing various flowers into bloom outside of the customary season. Iris in December and chrysanthemums in the spring are among the accomplishments already attained, and it is the intention of these specialists to bring together a group of flowers, all of different natural seasons, into bloom at the same time. One value of the discovery lies in the fact that it can be applied with only simple and inexpensive additions to the facilities of any greenhouse.

READY TO LEND FILMS ON MAKING CONCRETE ROADS

Many a woman more blessed with a sense of the ridiculous than she is with tact has remarked to Friend Husband as he climbed from underneath the car stalled on a muddy country road after a struggle with recalcitrant machinery, "if only a movie photographer were around."

Her wish would have been gratified this summer in many places in Delaware and New Jersey, for movie operators from the United States Department of Agriculture were there filming good roads with the assistance of engineers from the Bureau of Public Roads. The resulting picture, Modern Concrete Road Construction, is now ready for lending to interested persons who make application for its use at "Good Roads" meetings, schools, colleges, and meetings of engineers.

Every process involved in the construction of a concrete road is shown in the film from the heavy grading to the completed road. The picture opens with a view of an automobile stuck in the mud of an unimproved country road. After the spectator has been shown all the steps in the construction of a modern concrete road, the picture closes with a thrilling race between a railroad train and a motor truck on a concrete highway—a feature calculated to show the possibilities of rapid transit of freight traffic on good roads, but not to encourage speeding.

EFFICIENT USE OF HEATER KEEPS DOWN COAL BILLS

Too much coal is burned by the average householder in heating his house, say engineers in the Division of Rural Engineering, Bureau of Public Roads, United States Department of Agriculture, who have recently completed a study of how to heat the farmhouse efficiently. That too much coal is burned is due primarily, studies show, to lack of knowledge of how to regulate the heater. It is not enough to install a heater, fill the bins with coal, and then expect it to heat the house properly. The first season after installing a heater should be devoted to a study of fuels and their burning in the particular heater.

Some of the things in general which the engineers who have been in charge of this work advise the furnace operator to look after, if he wishes to heat his home comfortably with a minimum amount of coal are: Be sure the chimney is large enough for the size of the house and, if possible, have it straight up and down with a lined round flue. Study the dampers and use them intelligently in regulating the fire. Experiment with different kinds of coal until the best kind or the best mixture for your special heater is found. Do not use the poker too often unless the coal is of the kind that fuses, forms a crust, and interferes with the draft. Do not leave ashes in the ash pit; clean them out each time after shaking. Insulate pipes and warm-air ducts; it saves heat. Maintain, if possible, a humidity between 40 and 50 per cent; moist air heats more quickly and is much more healthful.

BARIUM POISONOUS TO RATS MAKES SATISFACTORY BAIT

A study of barium carbonate as a rat poison, made by the United States Department of Agriculture, indicates that a 20 per cent mixture with food makes a satisfactory bait. With this percentage a rat ordinarily needs to eat only one-third or three-eighths of a meal of average size to get a fatal dose. It was found that with this dose many of the rats poisoned died within 24 hours, though an occasional rat was found which survived an even larger amount, thus indicating that 100 per cent mortality is not to be expected in any case.

A summary of results of experiments conducted by various persons with a view to determining the deadliness of barium to different animals shows the fallacy of the assumption that barium is poisonous only to rats. It is pointed out that the fatal dose of barium per pound tends to decrease relatively as the size of the animal increases, and that a bait calculated to be fatal to rats may be assumed to be more or less dangerous to small domestic animals also.

Saving is personal efficiency. Buy War Savings Stamps.

WHAT MEAT INSPECTION MEANS

By J. R. Mohler, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture.

People in the United States are eating meat at the rate of half a pound a day each, so that in a year they consume over 15 billion pounds. Two-thirds of this is inspected by Bureau of Animal Industry employees, while the remainder should be inspected by State or municipal men, but, unfortunately, this is true only to a small extent.

Modern meat inspection in this country dates from 1906. Congress had made but timid inspection laws. About that time President Roosevelt became interested in newspaper reports about activities in "packing town" and he sent two committees to Chicago to investigate. Their reports convinced him that the thing needed in the law was teeth. After much sensational argument, everyone seemed to agree, so Congress put on the books the stringent act of 1906, a complete, effective, model measure that has worked every hour since for the protection of the public against unwholesome food as well as for the development of the Nation's live-stock industry in removing the prejudices of foreign countries against our meat exports.

Must Bear Stamp.

Fundamentally the law is based on the principle of interstate transportation. It says that no meat can cross a State line unless it bears the legend "U. S. Inspected and Passed." To get this mark the animal must have been examined twice by Federal scientists—first alive, then after killing when it lies skinned, headless and disemboweled, with every tell-tale membrane, muscle, and gland open to pitiless scrutiny. Then, if it was pickled or smoked or went into a can or casing, it must have been prepared without any harmful preservative, and the can must have been truthfully labeled. Moreover, the slaughterhouse must have been light, clean, sanitary, the packing rooms like kitchens, and every man or woman who touched the meat must have been clean and healthy and dressed in clean clothing.

Under this law, last year the bureau operated at 800 houses in 260 cities scattered over the country, chiefly in the Middle West but extending to Boston, San Francisco, and New Orleans. It inspected more than 65,000,000 animals and watched the preparation of 8,000,000,000 pounds of meat products. Of these it threw out 228,000 diseased whole carcasses, 750,000 parts of carcasses, and 18,000,000 pounds of products. It did this with 2,500 employees, two-fifths being professional veterinarians and the remainder practical meat-curing men. At seven centers over the country it had the assistance of its laboratories where skilled chemists probed into the problems of preservatives, spices, waters, and other ingredients. It maintained also a corps of highly trained men who traveled from place to place, giving each station an inspection so as to keep the men up to the mark and to make the whole system uniform throughout the country.

Condemned Carcasses not Wasted.

No, this ought not to add to the cost of meat. Carcasses and parts condemned for disease are not entirely waste. They are cooked in tanks under high steam pressure and the resulting products used for grease in soap and tallow and for fertilizer. The real loss is only a fraction of a cent a pound, and that is more than offset by the efficiency of modern factory conditions brought about by the requirements of the law.

CATTLE LOSS IN SOUTHWEST DUE TO OVERSTOCKING RANGES

Experiments being conducted on the Jornado Range Reserve, in New Mexico, by the United States Forest Service, indicate that the number of animals for the permanent breeding herd in that region should be only about 50 per cent of the carrying capacity of the range in good years. This takes into account the reduction in forage and carrying capacity in times of drought and allows a range of safety for emergencies.

Cattle raising on the open ranges of the Southwest in the past has been full of vicissitudes, and it was for the purpose of developing some plan of management that would stabilize the live-stock industry and help stock owners to meet trying conditions that the Jornado Range Reserve, near Las Cruces, N. Mex., was established in 1912.

The studies carried on at the Jornado Reserve show that overstocking the range at any time, and especially during drought, is a poor practice, that light grazing during the main growing season is necessary to maintain the grama grass, that a steady improvement in the grade of the range cattle can be obtained by following a definite plan of breeding, and that careful handling and keeping of breeding cows in thrifty condition will increase the number of calves raised on the range 25 to 50 per cent.

Reducing the number of animals prior to drought, reserving grama grass range for poor stock and giving supplemental feed, weaning the calves early, properly distributing the watering places, and vaccinating for blackleg have kept the average annual stock loss on the reserve for five years, including a period of drought, down to 1.9 per cent. The average annual loss on the open range in southern New Mexico during the same period is estimated at 16.7 per cent with a maximum loss of 35 per cent in 1918.

IDAHO BOYS AND GIRLS HOLD LIVE FAIR OF THEIR OWN

Boy and girl club members of Idaho held their own "fair within a fair" this year as a part of the State event. They occupied four large tents and three live-stock sheds in their own section of the fair grounds, displaying 179 calves, sheep, and pigs, most of them purebred; more than 800 exhibits of canned fruit, vegetables, and meats; about 350 samples of sewing; and numerous exhibits of farm and garden crops.

The boys and girls, to the number of 162, occupied a large, two-story dormitory, built for them on the fair grounds, and took their meals in a specially constructed mess hall adjoining. They were winners of demonstration and judging contests, or otherwise representatives of the best junior extension work done in 17 southern Idaho counties that have organized club work. The trip to the State fair was their reward.

Dedication of these two buildings as "Camp McCall" was a feature of the fair program. A fund of $15,000 for construction of this camp was raised in a campaign conducted by the boy and girl club workers of the University of Idaho extension division. The expenditure of approximately $10,000 leaves $5,000 toward erection of a second dormitory which will be required to complete the camp.

Fifty-eight prizes in the open classes were won by the calves, pigs, and sheep of the club members in competition with the best breeders of Idaho and other States. The grand champion Poland-China boar of the fair was a boy's club pig, bred, raised, and exhibited by Harvey Wolfe, of Nampa, Idaho.

Easing the Farm Woman's Kitchen Work—Bad Location Causes Many Extra Steps

According to a conservative estimate, there are about 8,000,000 women working every day, and most of them many hours a day, in the farm kitchens of the United States. Making these kitchens the well-ordered workshops they should be, because of the importance and amount of work done in them, would result in lightening and making more enjoyable the work of a large proportion of these 8,000,000 women.

The best location for the kitchen is on a corner of the house, in a wing, or an

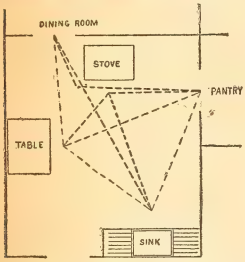

FIG. 1.—Large kitchen in which the inconvenient arrangement of sink and table makes it necessary to walk long distances in preparing and serving a meal.

ell, where there can be windows on at least two sides, so as to obtain light from more than one direction and cross ventilation, says a revised Farmers' Bulletin issued by the United States Department of Agriculture on the farm kitchen as a workshop. Whether the chief exposure shall be north, east, south, or west is a matter governed by individual preference and local conditions. A kitchen that receives the morning sun is usually desirable. It should have a pleasant outlook if possible.

Points to be Considered.

The kitchen, as well as all other rooms in the farmhouse, should be so located with reference to the barn and other outbuildings that winds will not bring unpleasant odors or flies from them. Also, if possible, it should be in a part of the house where dust will not be blown through the open windows and doors from the road. Seeding bare ground around the kitchen and making the necessary paths of cement or some similar permanent material will also keep much dust from being blown and carried into the kitchen as well as make the view more attractive. A tidy, well-ordered back yard can not fail to give pleasure to the workers indoors. Undesirable features in the view can often be cut off by a hedge or a screen of vines.

While the kitchen is the center and workshop of the house, its work also extends more or less to other parts of the house. In planning or building a home it is of greatest importance that the relation of the kitchen to the other rooms be considered. The kitchen work is most closely associated with the pantry, the dining room, and the cellar, woodshed or other storeroom. These should be as near and convenient as possible to the kitchen so that the journeys which must be made so often between these rooms will be short, thus saving steps and much time.

Using Kitchen Space.

Space should be provided in the kitchen and within easy access of the pantry and dining room for the worktable, sink, stove, ice box, and also for several chairs of different heights. One should be a rocker, in which the housewife can rest while waiting for the water to heat or for bread to bake. It is also desirable that provision be made for filling the ice box from either the outside of the house or the entry, so that the person filling it will not be obliged to enter the kitchen. This will save much mopping and cleaning. Refrigerators can be purchased fitted with a door on the side or back of the ice chamber, and an opening corresponding to this door may be cut in the wall of the house and the chest filled from the outside. If a screen is

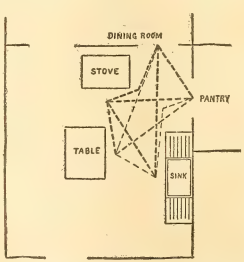

FIG. 2.—Same kitchen as shown in figure 1. The distances traveled have been reduced and many steps saved by cutting another door into the dining room and by moving the table and sink nearer to stove and pantry.

provided the door may be left open in winter so that the food may be kept cold without ice. When this is done the window frame should be tightly joined to the refrigerator, so that cold air can not come into the kitchen as well.

Wherever possible, a separate room should be provided for laundry purposes, and may be combined with a wash room and place for those coming in from out of doors to leave their coats, overalls, and muddy boots and overshoes. Such a room should be on the shortest and most direct line of travel from the barns to the dining room, so that there will be no temptation to use the kitchen instead for these purposes. Brooms, mops, and other cleaning equipment may be conveniently stored in this room or a closet leading from it. For sanitary, esthetic, and other reasons, a bedroom or bathroom on the ground floor should not open directly into the kitchen or the dining room.

EUROPEANS EAGER TO LEARN OUR HOME CANNING METHODS

All the world before long will be canning American style, if the present rate of progress keeps up. Last year France asked the loan of some canning specialists from the United States Department of Agriculture to teach them the purely American art of home canning. The results were so gratifying that the same group were asked to return this year to give further instruction. They went, and their work everywhere in France was attended with gratifying results.

The Director General of Agriculture in the little Duchy of Luxemburg, hearing of the method of preserving fruits and vegetables being taught the French, asked if the American canning experts could be lent to Luxemburg when they were through in France. This was arranged, and the first two weeks in September found the Americans teaching in Luxemburg how to can and dry garden products and how to can meat and fish. From Luxemburg the demonstrators went to Holland, where at Amsterdam and other places a series of lectures were given. At the request of the British Department of Agriculture, the canning specialists then went to England and gave demonstrations before the English Institute workers. One of the group is now in Denmark and another in Egypt. Wherever American canning methods are taught the response and appreciation is most gratifying.

Alsike clover is most at home in northern latitudes or at high altitudes. It thrives best in a cool, moist climate.

"BETTER SIRES—BETTER STOCK" GOES AHEAD

PUREBREDS REPLACE GRADE SIRES.

"I disposed of a grade Holstein bull because I wanted a purebred."

"I have a share interest in a company pure-bred sire."

"I have purchased a pure-bred boar."

These comments are typical of live-stock developments in Minnesota, where the superior merits of pure-bred sires over grades or scrubs are rapidly being recognized.

In connnection with the "Better Sires—Better Stock" movement, the United States Department of Agriculture is receiving many remarks such as the foregoing from live-stock owners who wish to cooperate in improving the quality of domestic animals in the country. Each of these persons participating in this useful work receives a suitable emblem of recognition issued in the name of the live-stock owner and granted jointly by the State Agricultural College and the United States Department of Agriculture.

BULL ASSOCIATION PROVES PROFITABLE FOR FARMERS

Two years ago the United States Department of Agriculture and cooperating agencies organized a bull association in Webster County, Mo., with 31 members. Now there are twice that many members, due to the success and usefulness of the association.

Before the association was formed there were 18 bulls owned by the men who afterwards joined it. Upon the formation of the organization the number of bulls was reduced two-thirds, because, after the members had been arranged into blocks, it was found that six bulls were enough. These were much finer animals, however. Judging them by their money value, the new ones were three or four times as good as the ones they replaced, since the average investment per bull was $75 before organization, and $276 after.

Yet, owing to the smaller number of bulls needed under the cooperative arrangement, the cost per farmer was but little more. The members had on the average $43.71 invested in their inferior bulls, while the superior bulls owned by the association cost each member only $53.45. This $10 increase of cost per member meant a $200 increase of value in the individual bulls from which they now have service—one thing which accounts for the doubling of the membership of the association after running two years. The value of the calf crop will probably show a very much greater increase.

SOLD COWS AND REPLACED THEM WITH BETTER ANIMALS

In seven cow-testing associations in New Hampshire, 216 cows were sold during 12 months and their places filled by more profitable animals, according to a report made to the Dairy Division, United States Department of Agriculture. This averages nearly 31 cows for each association. In these New Hampshire associations some notable improvement in production is reported.

In six cow-testing associations in that State, which have been at work for two years, 19 herds made an average increase per cow of 763 pounds of milk annually and an increase of $49.30 in the income over cost of feed. In six associations that have been at work for three years, six herds secured an increase of 866 pounds in the milk yield per cow and an income over cost of feed of $98.31 more than the herds formerly averaged.

In general, cow-testing association work in New Hampshire is on a good, sound basis, the department says. Association members are studying individual cow records, the ability of purebred bulls to increase production, wise feeding practices, and the proper raising of young stock. The influence of these studies is affecting even dairymen who are not members of the associations.

GOOD LIVE-STOCK FARMING MEANS GOOD CITIZENSHIP

In a message to the directors and members of the Wisconsin Livestock Breeders' Association, Andrew W. Hopkins, until recently its secretary, makes the following statement: "It truly is a noteworthy fact that where live-stock farming has attained a high standard of perfection there also has citizenship attained an equally high standard. An intelligent contact with farm animals always has and always will insure quality in the man; and a closer kinship with the better types surely brings forth fruits not yet compassed. General education, honesty of purpose, righteous living, culture, and religion have made the most progress in those communities in which intelligent stock farming has been most generally pursued."

The United States Department of Agriculture has received a copy of Mr. Hopkins's recommendations for the future development of the live-stock industry in Wisconsin. These recommendations point out that stockmen may well seek to increase their returns from live stock: (1) by discarding inferior animals, (2) by strengthening their organizations, (3) by cooperating when necessary in buying and selling, (4) by combating disease, (5) by supporting boys' and girls' club work, (6) by studying live stock and milk marketing, (7) by insisting upon more stabilized markets, and (8) working for the proper relation between the price paid the producer and that paid by the consumer.

BOY'S SUCCESS WITH BULL CALF.

Melbourne Wells is a Florida boy living at Gainsville, where he joined one of the boys' agricultural clubs. Through assistance which had been obtained for him at a near-by bank he purchased a registered Aberdeen-Angus bull calf for $108. This was in June, and the calf weighed 348 pounds. The animal was fed ground corn and peanut meal and given the run on a Bermuda-grass and cowpea pasture. In the fall it weighed 675 pounds.

The county fair was held in November and the calf was exhibited there. It won first prize in the calf club, was declared junior champion bull and sweepstakes winner over all breeds. From there it was taken to the State fair, where it won second calf-club prize, and its young owner was awarded the Aberdeen-Angus Record Association medal for herdsmanship shown by the finish of the animal. One of the largest Angus breeders of the State offered the boy $500 for his calf. The offer was promptly refused.

"I refused the offer," said Melbourne, "because I figured that if my bull was worth that price to this large and well-established breeder, it would be worth much more on our farm to head the herd of Anguses that papa and I are trying to get started."

RESTORING MORGAN STRAIN OF HORSES.

Efforts of the United States Department of Agriculture to restore the Morgan strain of horses, which had become nearly extinct, showed their effect in the recent 300-mile test for Army horses. Out of 27 entries, only 10 finished, and of these, the sixth and seventh were Morgan horses, one of them raised on the department's stock farm in Massachusetts. The horses were required to travel 60 miles a day for five days, carrying the regulation Cavalry load of 245 pounds.

Just an Old Friend Under Another Name—Jack Bean Used Again to Fake Farmer

At frequent intervals in recent years promoters have resorted to extravagant advertising of the merits of the jack bean. One of the latest efforts in this direction that has come to the notice of the United States Department of Agriculture is unusually extreme in its praise of this crop: "Mr. Farmer, $8 invested in American coffee beans and planted on one acre will bring you in four months $400."

Turns Out to Be an "Old Friend."

The American coffee bean is our old friend the jack bean, says the department. Ever so often it is exploited as a wonderful new crop. Long ago it was advertised as "Pearson bean" and "Wonder bean." In 1913 one advertiser called it Wataka, or Giant Pod Stock bean, claiming it would yield 400 bushels per acre. Last spring it came out as the South American coffee bean, with the information that it would yield 300 to 600 bushels per acre. This fall it appears as the American coffee bean, and the seed is offered at $25 a bushel. The extravagance of this price is offset by the promise that each acre of the bean will yield in four months' time a crop worth $400.

The jack bean is at most a crop of very small value. It will yield a fairly large crop of green herbage, but this is so extremely bitter that it is very difficult to get animals to eat it, either green or as hay. Possibly it may be better as silage. The seed crop varies from 20 to 35 bushels per acre. The beans are not relished by animals, and cattle do not make much gain when forced to eat it, as determined by the work of the Mississippi Agricultural Experiment Station. The bean is to a slight extent used as food by Mexicans and others, but the flavor is very strong and in some cases serious digestive disturbances have been reported. The seeds contain much urease, a substance used in medicine, but a few tons of jack beans supply the world's annual demand for this substance.

All the evidence available indicates that the jack bean is not likely to become of much value to American agriculture. Full information concerning it is contained in the United States Department of Agriculture Circular No. 92, which can be secured free on request of the department at Washington, D. C.

CROP RECORD BOOKS.

Catch-as-catch-can methods of conducting the farming business are being discouraged through the efforts of the county agent in Madison County, Ala. Farmers were first encouraged to keep expense on labor accounts on the growing of a single crop. Standard record books were furnished for this purpose. The practice has been a great assistance in the planning of a subsequent year's work and has resulted in the saving of expenses, the seriousness of which had not been realized when no accounts were kept. A number of farmers who started keeping accounts have learned the advantage of having a deposit at the bank and have acquired habits of thrift.

TIME TO LOOK FOR MITES.

This is the time of the year to be on the constant lookout for the presence of mites on the fowls, and particularly in the poultry house. These insect pests not only lower the vitality of the birds, and thus render them liable to disease, but their presence has a decidedly bad effect on egg production. Frequent spraying of all cracks and crevices of the house and the undersides of the roosts with kerosene or 5 per cent carbolic acid will greatly help to eradicate mites, and thus add to the comfort and general health of the birds.

HOME-TANNED HIDES GIVE FARMERS UNCERTAIN PROFIT

Apparently it doesn't pay the farmer to tan his own leather. The Bureau of Chemistry, United States Department of Agriculture, is conducting leather-making experiments upon the scale to which the average farmer would have to adjust his work, and specialists say that the results obtained thus far do not warrant general practice. Good leather can be made in individual tanneries, but the results are too uncertain to give reliable profits.

The work was taken up by the department when it became evident that the farmers were feeling the injustice of a transaction wherein they sold a whole cowhide for less than they paid out for a pair of work shoes—an occurrence not at all unusual. Investigation shows that the leather dealer is not entirely to blame for the low prices that the farmer receives for his hides. Too often the hide from the farm cow is taken off in a careless manner that leaves the skin full of cuts and holes—farm hides are never as uniform as those bought from the packing houses, where the animals are carefully graded and the skins removed by expert skinners. For that reason the hide buyer is always willing to pay more for the packer's product than he can offer the farmer.

Then, too, the farmer sells his cowhide to the junk dealer, who deducts his profit from the price he pays. Whenever it is possible to collect a number of hides and skins it will pay the owner to deal directly with a large dealer, the specialists say.

COMPLETES 4-YEAR TEST ON COSTS OF CATTLE FEEDING

(*Continued from page 1.*)

In the accompanying table the bulletin gives an interesting summary of costs and gains.

It will be noted that the lot of steers fed on a winter ration of corn silage, wheat straw, and cottonseed meal made the greatest gains and that this ration was also the cheapest.

The bulletin records feeding tests that will be extremely valuable to the farmers of Pennsylvania, Ohio, West Virginia, Virginia, Kentucky, North Carolina, Tennessee, and the adjacent States. The bulletin may be had on application to the United States Department of Agriculture, at Washington, D. C.

General Summary of Costs and Gains.

Items.	Lots 1 (corn silage, mixed hay, and wheat straw).	Lots 2 (corn silage, wheat straw, and cottonseed meal).	Lots 3 (mixed hay and wheat straw).	Lots 4 (corn silage and soy-bean hay).	Lots 5 (corn silage, rye hay, and cotton-seed meal).
Average cost of wintering	$14.49	$14.32	$15.67	$14.76	$16.82
Average length of winter periods ... days	128	129	129	133	133
Cost of feed per day, winter	$0.116	$0.111	$0.121	$0.111	$0.127
Average cost of summer feed	$8.20	$7.90	$7.90	$7.00	$7.00
Average length of summer periods ... days	164	153	158	140	140
Cost per day, summer	$0.05	$0.05	$0.05	$0.05	$0.05
Average of total costs per year	$22.69	$22.22	$23.57	$21.76	$23.82
Average gain or loss per steer, winter ... pounds	−1	+63	−35	+27	+11
Average gain per steer, summer ... do	317	262	309	240	281
Average total gain per steer ... do	316	324	274	267	292
Cost per pound yearly gain	$0.072	$0.069	$0.086	$0.081	$0.081

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NEW DISCOVERY MAY CHANGE WORLD FERTILIZER INDUSTRY

Devises New Method for Extracting Phosphoric Acid from Rock.

Bureau of Soils Announces It Has Solved Problem of World-Wide Interest — Process Worked Out on Approximately Commercial Basis at Arlington, Va.

What may prove to be a revolutionary development in the fertilizer industry of the world has been reached by the Bureau of Soils, United States Department of Agriculture, which has just solved the problem of extracting phosphoric acid from phosphate rock by heating mixtures of this mineral, sand, and coke to a smelting temperature in a fuel-fed furnace. The new process has been worked out on an approximately commercial basis at the department's experimental plant at Arlington, Va.

Comes Largely from Florida.

The phosphate used for fertilizer in the United States comes largely from the deposits of rock in Florida. There are also large deposits in Tennessee and a number of beds in South Carolina, where the rock was first exploited for this purpose. The established method for producing soluble phosphate has consisted in treating the rock with sulphuric acid. In practice, a quantity of sulphuric acid equal to the quantity of rock is used, and the resulting product, which is known as acid phosphate, contains only one-half the percentage of phosphoric acid contained in the rock from which it was derived. Commercial acid phosphate, for instance, made from a 32 per cent rock contains only 16 per cent of phosphoric acid. The elaborate washing and screening process now used in preparing phosphate rock for treatment with sulphuric acid often results in the loss of two-thirds of the rock, and it was with a view to saving this immense waste of phosphate that the new process was evolved.

The United States Department of Agriculture has been experimenting for some time along the lines of freeing the phosphoric acid by means of a high degree of heat. It was the first to adapt the Cottrell precipitator to the collection of phosphoric acid, the apparatus having been previously devised by Dr. Cottrell to abate the smoke nuisance and to recover sulphuric acid from smelting operations. The first work was done in an electric furnace which was thought to be required to generate the high degree of heat necessary, about 1,600° C. or 2,900° F. At this temperature mixtures of phosphate rock, sand, and coke were reduced to a molten slag which was tapped off at intervals, the phosphoric acid escaping in the form of fumes which were afterwards collected in a liquid or solid form.

It soon became evident that this process would be prohibitively expensive with an electric furnace, except in localities where electric power could be obtained at a very low cost, about $25 per horsepower a year, and the department therefore turned its attention to the possibilities of using crude oil, the cheapest fuel obtainable in the vicinity of the large phosphate-rock deposits of Florida. The efforts have recently met with success, and figures kept on the experimental runs at Arlington indicate that phosphoric acid can be extracted more cheaply in an oil-burning furnace than by the old sulphuric-acid process.

One problem which department scientists have worked out is that of keeping the fuel in direct contact with the rock material until the reaction is well started. For this purpose, and for convenience in

(*Continued on page 8.*)

ERADICATING ANIMAL PESTS.

Work of eradicating animals destructive to crops, stock, etc., in the United States, carried on by the Biological Survey, United States Department of Agriculture, and cooperators, in the last fiscal year is estimated to have saved $16,000,000. Fifty thousand predatory animals were shot, trapped, or poisoned and 34,000,000 acres poisoned to eradicate ground squirrels and prairie dogs, 132,000 farmers cooperating. Annual damage by these animals is conservatively estimated at: Wolves, coyotes, etc., $20,000,000; prairie dogs, ground squirrels, and other native rodents, $300,000,000; house rats and mice, $200,000,000.

MILLIONS OF CHRISTMAS TREES REQUIRED IN U. S. ANNUALLY

Equals Number Used in England, Scotland, and Wales Combined.

About 25 Per Cent Greater Than the Number Required for Celebrations in Germany—In the United States the Variety of Tree Used Varies with the Locality.

The United States uses annually between four and five million Chirstmas trees, according to the estimate of the Forest Service, United States Department of Agriculture. This equals approximately the combined consumption of England, Scotland, and Wales and is about 25 per cent greater than that of Germany. The Christmas tree bears practically the same fruit the country over, but the variety of the tree itself varies according to locality. The fir is undoubtedly the Christmas tree par excellence, especially in the Northeastern and Lake States, on account of its long, horizontal, spreading, springy branches, and deep-green, fragrant foliage which persists longer than that of any other evergreen.

The Christmas-Tree Ship.

On the Great Lakes "the Christmas-tree ship" bringing greenery from the upper peninsula of Michigan to Chicago or Detroit is usually one of the latest events in navigation each winter. In the Northeastern and Lake States Balsam fir furnishes the bulk of the Christmas-tree trade. In the South the Fraser fir is the favorite. In Colorado and other Rocky Mountain States, fir, though abundant, is difficult of access, and the Lodge Pole pine and occasionally the Douglas fir and Englemann spruce are used. On the Pacific coast the Christmas tree is often the white fir. Spruces vie with firs in popularity as Christmas trees, but as a rule in the South and West they occur at high altitudes which make them difficult to get.

New York and the New England States consume 1,500,000 trees. Black and red spruce are very commonly seen in New

England Christmas celebrations and in New York and Philadelphia. Throughout Illinois and Ohio nurserymen partly supply the local demand with nursery-grown Norway spruce. Pines are in great demand for Christmas trees when fir and spruce are not available. Throughout Maryland, Virginia, and in Washington, D. C., the scrub pine finds a way into many homes, while in southern Wyoming the Lodge Pole pine is almost the only species available.

Hemlock is often used but only in the absence of other varieties. Its slender, springy branches are better adapted to the manufacture of so-called fancy greens. Occasionally a few arbor vitae are shipped among firs and spruces to New York and Philadelphia. Red cedar is not despised where better trees can not be had, as in the treeless States and often in Tennessee and Pennsylvania. In California red cedar and incense cedar are not uncommon.

Maine, New Hampshire, Vermont, the Berkshire Hills in Massachusetts, and the Adirondacks and Catskills in New York are the source of supply for New York, Philadelphia, and Boston, and even for Baltimore and Washington. The swamps of Michigan, Wisconsin, and Minnesota furnish the markets of Chicago, St. Paul, Minneapolis, and the cities of the plains States.

Christmas trees vary in size from 5 to 35 feet in height, and trees with perfect whorls of branches are most sought for. Prices vary from 25 to 50 cents up to $35 or $50. There is very little profit in the business for those who furnish the material. These are mostly farmers and owners of woodlots who look upon the trees as a gift of nature, and in selling them consider only the labor of cutting and hauling and not the labor and expense required to grow the trees.

An Age-Old Custom.

Very commonly the question is raised as to whether the cutting and use of these trees for Christmas purposes is not a great waste, and whether steps should not be taken to discourage or prohibit it. In the opinion of department officials the custom is so old, so well grounded, and so venerated, that even if it were economically somewhat indefensible, these aspects will and should continue to outweigh economic considerations. It is denied, however, that pure economic considerations would lead to the abandonment of the Christmas-tree custom. Trees are for use, they argue, and there is no other use to which they could be put that would contribute so much to the joy of mankind as their use by children on this one great holiday of the year. Further, particularly in the Northeastern States, a large proportion of the Christmas trees are cut from pasture lands on which they are encroaching or from land which would be cleared up in the ordinary course of farm improvement. The trees would be cut in any event. A market for them gives the owners some return for their labor if nothing more. It is true that in the vicinity of large cities the Christmas-tree supply is sometimes secured in such a way as to be destructive of young growth. This, of course, should be discouraged.

Improves the Forest.

That the use of Christmas trees is perfectly compatible, however, with the welfare of the forest is fully proved by the practice in the European forests. The cutting of small trees for Christmas is not there considered in the least as a menace to the forest, but as a means for improving the forest and a source of revenue, and is therefore constantly encouraged. It it not by denying ourselves the wholesome pleasure of having a bit of nature in our homes, forest officials say, that we shall preserve our forests, but by learning how to use them wisely and properly. The following rules are laid down by the Forest Service for the woodland owner who wishes to improve a rather dense stand of evergreens and market the good trees for Christmas purposes:

(1) Find a market for Christmas trees of the species which are growing on your land.

(2) Go through the woodland carefully, pick out and mark the most vigorous specimens of trees. These should be allowed to remain to form the mature stand of timber.

(3) Mark for removal the trees which are crowding these better specimens.

(4) Cut as many of these inferior trees as there is a suitable market for. Cut them carefully to avoid damage to the remaining trees.

(5) Remove them carefully from the area and market them in accordance with instructions from the buyer to avoid any cause for dispute.

IMPORTANCE OF TICK ERADICATION.

The importance of the tick-eradication work being done by the United States Department of Agriculture is indicated by a letter from an East St. Louis stockyard firm to a county agent in Arkansas regarding a shipment of 25,000 pounds of cattle from one of the infested areas. These cattle, while in prime condition, were placed in the quarantine pen because of the locality from which they originated. The difference in location caused a reduction estimated at 35 cents per hundredweight, or $87.50 on a single carload. The cattle were of practically the same grade as those from an adjoining county which has been freed from tick diseases through the work of the department and which sold for a higher price.

Government Birds to be at Washington Poultry, Pigeon, and Pet Stock Show

Lady Victory, the White Leghorn hen that in five years laid 750 eggs, will be one of the honored guests at the Washington Poultry, Pigeon, and Pet Stock show at the National Capital, December 14 to 18. This bird, owned by the United States Department of Agriculture, has a pullet record of 214 eggs, a three-year average of 178 eggs and a five-year average of 150 eggs. She is now six years old and in good breeding condition.

Besides Lady Victory, the Government poultry farm will exhibit several other White Leghorns which have pullet records of 200 eggs or more. In all, 12 or 15 hens and cocks of various breeds will be entered by the Department of Agriculture.

Arrangements have been made also to have on display at the exhibition, besides the birds, the complete Government poultry exhibit, consisting of model houses, brood coops and appliances, poultry feeds, panels of pictures illustrating different branches of poultry work, and various views of the Government farm. One or more attendants will be present at all times to furnish such information as may be desired.

The Washington Poultry and Pigeon Show is national in character, drawing its entries of birds, incubators, and poultry appliances from various States of the Union. It is expected that this year's show will be one of the largest and best yet held.

CALCIUM ARSENATE TREATMENT.

An idea of the benefit gained by application of the calcium arsenate treatment developed and recommended by the United States Department of Agriculture against the cotton-boll weevil is found in the experience of a large planter at Tallulah, La. With the exception of certain test plats, this man's entire acreage was dusted with calcium arsenate, the cost being $9.20 an acre. He obtained an average yield of 1,215 pounds of seed cotton to the acre on the land surrounding the test plats, while these unpoisoned test plats averaged only 300 pounds, or about 25 per cent of the yield on the poisoned cotton. Thus his net profit from poisoning on these areas on sales made before declining prices of cotton was about $120 an acre.

Makes Preliminary Report on Production And Stocks of Naval Stores, Aug. 1, 1920

The following preliminary report on the production and stocks of gum spirits of turpentine and rosin for August 1, 1920, is made by the Bureau of Chemistry, United States Department of Agriculture:

Production Figures.

The statistics compiled from reports from producers of turpentine and rosin indicate that there were made this season, up to August 1, 1920, about 237,000 casks of turpentine and about 712,000 round barrels (approximately 500 lbs. gross) of rosin. The producers' estimates for the balance of the season indicate that there will be produced from August 1 to the close of operations about 234,000 casks of turpentine and 740,000 barrels of rosin, making a total for the season of about 471,000 casks of gum spirits of turpentine and about 1,452,000 round barrels of rosin. Wood turpentine, wood rosin, and rosin reclaimed from still wastes are not included in these figures. These usually amount to about 10 per cent of the production of gum turpentine and gum rosin.

It has been the experience in the past that production after August 1 has usually been slightly greater than that up to August 1. The producers seem to have been overconservative in their estimates on production for the last half of the season this year, and it is possible that the total production for the season will be somewhat greater than the figures given above. The figures as compiled are as follows:

1920 Season.

On hand at stills Apr. 1, 1920:
- Turps 6,765
- Rosin 67,439

Production up to Aug. 1, 1920:
- Turps 237,155
- Rosin 712,387

Estimated production, balance of season:
- Turps 233,876
- Rosin 739,679

On hand at stills Aug. 1, 1920:
- Turps 29,343
- Rosin 167,422

1919 Season.

[For comparison. Total production for season.]

On hand at stills Apr. 1, 1919:
- Turps 24,050
- Rosin 130,035

Production up to August 1, 1919, rosin, 366,000.

Estimated production, balance of season, turps, 1,237,000.

On hand at stills Aug. 1, 1919:
- Turps 19,364
- Rosin 115,702

Stocks on hand.

The stocks of turpentine and rosin held by the chief consuming industries of the country, those producing paper, paper size, paint and varnish, soap, greases and lubricants, shoe polish, rosin oil and pitch, printing ink, sealing wax and insulating materials, soldering flux, fly paper, matches and woodenware, linoleum and roofing, automobiles, buggies and wagons, iron and steel, and foundry supplies, were approximately as follows:

	Casks of turpentine.	Round barrels of rosin.
On hand Aug. 1, 1920	28,300	169,300
For comparison the following figures are given:		
On hand Feb. 2, 1920	26,400	290,100
On hand Aug. 1, 1919	20,500	182,000
On hand Apr. 1, 1919	28,500	203,000

Sunflowers are being extensively grown for silage in parts of Oregon, Washington, Idaho, and Montana where climatic conditions are such as to make corn growing for silage uncertain. Sunflowers yield as high as 7 or 8 tons to the acre, and when cut green for silage have not developed enough wood in the stalks to seriously impair their use for cattle feed. Growing of sunflowers is being encouraged by the county agents, and extensive tests of the action of silage on sunflowers are being made at the United States department experiment station at Redfield, S. Dak.

SEED OF REDTOP FOUND TO BE ADULTERATED OR MISBRANDED

Seed of redtop was secured during the calendar year 1919 in the open market, in accordance with the following paragraph in the act of Congress making appropriations for the United States Department of Agriculture:

"Where such samples (seeds of grasses, clover, or alfalfa and lawn grass seeds secured in the open market) are found to be adulterated or misbranded, the results of the tests shall be published, together with the names of the persons by whom the seeds were offered for sale."

In carrying out the provisions of this act 902 samples of redtop seed were secured and analyses made under the direction of Mr. E. Brown, botanist in charge of the seed laboratory, Bureau of Plant Industry, and publication has been made of the analyses of the samples found to be adulterated or misbranded, together with the names of the seedsmen by whom they were sold or offered for sale.

Of the 902 samples obtained from 436 firms as redtop seed 57, or 6½ per cent, were found to be adulterated or misbranded through being mixtures of redtop and timothy seed. These adulterated or misbranded lots were purchased from 33 firms, situated in widely different locations in the United States. In the case of only one of the lots, the analyses of which follow, was there any statement by the firm selling the seed as to the percentage of pure seed or germination, and in the case of that one sample the label attached to the seed showed a percentage of pure seed 20 per cent higher than that found on analysis.

The Department of Agriculture will continue to examine and report promptly as to the presence of adulterants and dodder in any sample of seed submitted for that purpose. According to the location of the sender, these samples may be submitted to the seed laboratory at Washington, D. C., or to any of the following laboratories maintained through the cooperation of this department: Branch seed testing laboratory, agricultural experiment station, Columbia, Mo.; branch seed testing laboratory, Oregon Agricultural College, Corvallis, Oreg.; branch seed testing laboratory, Purdue University, La Fayette, Ind.; branch seed testing laboratory, agricultural experiment station, Berkeley, Calif.; branch seed testing laboratory, College Station, Tex.

BINDERS BREAK RICE-HARVEST STRIKE.

Rice planters of Iberville County, La., were saved several dollars an acre in the expense of harvesting through the work of the county agent of the United States Department of Agriculture in encouraging the use of binders drawn by tractors.

Prior to the introduction of the binders, laborers had struck for higher pay. They had been receiving $12 an acre and demanded $14. Three power binders were obtained. After they were put to work laborers began to return to the fields, and in less than a week's time sufficient labor was obtained to cut the rice at $10 an acre.

Weekly News Letter

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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COOPERATIVE WOOL SALES NET FARMERS $13,020 GAIN

Cooperative marketing of wool through the advice of the local county agent of the United States Department of Agriculture gave growers of Williamson County, Tex., 60 cents a pound at a time when local buyers had offered only 35 cents.

The Williamson County Sheep and Goat Breeders' Association was used as a medium for handling the wool. Sealed bids were first received, but, possibly due to opposition to the cooperative movement, no particular advance in price was offered. The farmers' committee thanked the bidders and declined all offers, and preparations were made for a shipment to Boston. The local price immediately went up 15 cents, but the growers remained firm and sent the wool away. The Boston price was 25 cents in advance of the original local price. The total gain to the farmers was estimated at $13,020.

SEVEN MORE TOWNS ADDED TO CORN-BORER QUARANTINE

Seven additional towns in Massachusetts, New Hampshire, and New York have been placed under the Federal quarantine against the European corn borer, effective in other parts of the States, the Federal Horticultural Board of the United States Department of Agriculture recently announced. The order, effective November 23, extended the quarantine to include Fairhaven, in Bristol County, Mass.; Atkinson, in Rockingham County, N. H.; Buffalo and Elma, in Erie County; Grand Island, Niagara, and Wheatfield, in Niagara County, N. Y.

Determined effort is being made by Federal officials to check the spread of this insect pest, which is practically a newcomer in the United States. Movement of all articles likely to carry the borer from the infested areas is regulated and a careful watch is kept by agents of the department.

USES TIRE PUMP AND QUILL AND SAVES COW FOR FARMER

With a first-aid veterinary kit consisting of a chicken quill and an automobile pump, one of the county agents of the United States Department of Agriculture saved a $200 cow belonging to a farmer in Pender County, N. C.

This farmer had expressed an unfavorable opinion of farmers' cooperative demonstration work, declaring that he would rather use his money for other purposes than in helping to pay the county's portion of the expense. While he was in town he received word that his valuable cow was attacked with milk fever. The county agent went home with him and found the neighbors using primitive methods in treating the animal for "hollow tail" and colic.

Using the chicken quill and the automobile pump, the county agent pumped the cow's udder full of air. In less than two hours she was on her feet. Some simple remedies completed the cure.

The farmer attempted to give the county agent a check for $10, which, of course, was declined. The farmer, however, became a warm supporter of the farm-extension work.

DEPARTMENT BIG EXHIBITOR AT CHICAGO LIVE-STOCK SHOW

Work of various bureaus of the United States Department of Agriculture for the benefit of hay and grain producers, dealers, and consumers was shown in a series of exhibits at the hay and grain show held in connection with the International Live Stock Exposition in Chicago November 27 to December 4.

This exhibit occupied a space of 3,100 square feet and featured the work of 9 of the 17 bureaus of the department. Under Plant Industry was given a view of the cereal and cereal-disease investigation, the work on forage crops and corn, and of the seed laboratory. The Bureau of Entomology furnished charts and exhibits on insects injurious to corn and grain. The Bureau of Markets had an exhibit showing activities to establish official standards for hay and grain.

The Bureau of Chemistry exhibited the results of some of its work in analysis of feeds and fodder, and also gave demonstrations of grain-dust explosions, which cost millions in the destruction of mills and elevators in the United States and which kill more than 80 workmen each year.

An exhibit by the Biological Survey illustrated the work done to exterminate grain-destroying rodents. The Office of Farm Management gave tables and other graphic demonstrations of farm costs, including labor, with suggestions for labor saving. The States Relations Service showed the work of boys' corn clubs. The Bureau of Soils exhibited specimens of hay and grain soils with data; and the Division of Publications had a display case of appropriate bulletins and circulars issued in the interest of better farming and marketing methods.

TEST NEW AFRICAN VARIETIES AS TO ADAPTABILITY TO U. S.

Sixteen hundred lots of seeds and plants of African fruits, vegetables, grains, and flowers not common to this country have been sent to the United States Department of Agriculture for a test as to their adaptability to American soil as a result of a trip made by Dr. H. L. Shantz, as agricultural explorer. Dr. Shantz accompanied the Smithsonian-African expedition, which made a tour of interior Africa from Cape Town to Cairo, penetrating the Orange Free State, the Transvaal, the Congo, East Africa, the Sudan, and Egypt, with side trips to other parts of the continent and adjacent islands.

Among the many new crops, one that is viewed with interest is a gourd 2 feet long which contains 2 gallons of succulent seed about the size of an almond. The meat of these seeds resembles that of the butternut in taste, and in addition to their possibilities as a nut substitute they are rich in oil. Many new kafir corns and sorghums, as well as grasses, suitable for the semiarid West as well as the pine lands of the South, some excellent new mangoes, a number of oil plants, some dry-land rice, and a large number of grains and grasses are among the specimens. The department has found that several crops which flourish in central Africa are adapted to the southern parts of the southwestern United States. The American-Egyptian cotton and Sudan grass are among the noteworthy acquisitions as a result of previous expeditions.

PAPER AND FORESTS

By Wm. B. Greeley, Chief of Forest Service, U. S. Department of Agriculture.

The paper problem of the United States is primarily a forest problem.

The paper industry of the United States is now concentrated largely in the coniferous forest belts of the Great Lakes, the northern Alleghenies, New York, and New England. Twelve years ago these forests furnished all of the raw material for the industry. Year by year, as they have been depleted, the adjacent timber belts of Canada have been drawn upon until now a full third of our paper or paper-making materials comes from the Dominion. The pulp woods left in the Northern and Eastern States can not last under the present rate of cutting, more than 15 or 18 years. The spruce forests of Canada will continue to furnish pulpwood for a longer period but in their turn are no less exhaustible. Meantime our consumption of paper is steadily increasing and now exceeds 35 pounds per year for every man, woman, and child in the country.

Paper Shortage World-Wide.

The rest of the world is in the same situation. Nearly everywhere the progress of civilization has been marked by an increased per capita consumption of paper; and nearly everywhere paper is short. From far-off Australia, from China, from Japan, and from South America are coming demands upon the paper-making resources of the North American continent. Large publishing houses of England are acquiring pulp factories and forests on this side of the Atlantic. Confronted by a world hungry for paper the United States will indeed find a foreign source of supply a broken reed upon which to lean.

What, then, is the answer? The New England and Middle Atlantic States contain 31 million acres of heavily culled or logged-off lands. The Lake States contain 33 million acres of logged-off forest. Here are 64 million acres of timber-growing land within a stone's throw of our paper mills, land which could supply these mills several times over with pulp wood if they were but kept at work growing it. In the application of forestry to these enormous areas, much of which are now practically waste land, lies the only effective solution of the national paper problem in the future, as well as the problems arising from shortages of other essential forest products. There is no situation that emphasizes more clearly the need for a national forestry policy, enlisting the owner of the land and the public alike in the restoration of these areas to producing forests.

Western Resources Should Be Drawn Upon.

There will be a gap, of course, between the end of the old forest crop and the beginning of the new. To fill that gap and at the same time distribute our paper industry in a much more logical relation to the resources of the country as a whole, we must turn to the paper-making woods of the West. The Western States contain easily 400 million cords of paper-making woods, and southern Alaska contains another 100 million cords. With 5-cent newsprint in our principal paper markets there is no fundamental reason why these western resources should not be drawn upon for a national supply as well as the local requirements of their own States.

While the pulp-wood forests of the West offer an immediate opportunity to increase the production of paper on American soil and will contribute largely to our future supply, it is undesirable from every standpoint that the paper industry should eat itself out of existence in the Eastern and Northern States. And there is no reason why a large paper industry in our eastern forest regions should not be permanent, supported by raw material produced wholly within our own borders. All that is required is the intelligent use of land for the production of timber when not suited by its nature to more valuable products.

Regulation of price, control of distribution, restraint upon profiteering, however necessary as temporary expedients, will not solve the paper problem. There is but one effective solution—increased production of paper and continuous crops of the raw material whereof it is made. Our need for paper to-day is simply one concrete measure of our need for a national forestry policy.

FARMERS BEAT LOW MARKET; MAKE WOOL INTO BLANKETS

Farmers of North Carolina, assisted by a representative of the United States Department of Agriculture and the State College of Agriculture, have found that there are more ways than one to dispose of wool. They are having their wool manufactured into blankets and expect to sell the blankets. About 15,000 pounds of wool produced in North Carolina has been handled in this manner.

The bottom dropped out of the wool market for North Carolina. Three wool sales which were to be held at Washington, Greensboro, and Asheville were abandoned, due to the fact that there was no market for the wool at prices acceptable to the farmers. After the sales were canceled a large manufacturing company, with establishments at Winston-Salem and Elkin, was interested in the proposition to make up the wool of individual farmers into blankets. A representative was stationed at Elkin to receive the wool. Each consignment was weighed, graded, and a report made up showing just how many blankets of a certain grade and quality could be made from the lot. This saved the manufacturing establishment the necessity of advancing cash for wool on an uncertain market. Many of the farmers are now arranging to place their blankets on the markets, and it is estimated that their wool will average them something like 50 to 55 cents a pound and in some cases more. Wool from the State experiment station netted approximately 73 cents a pound and that from a State test farm approximately 84 cents a pound.

BANISHMENT OF SCRUB SIRES AIM OF CHESTER COUNTY, PA.

Under the title "The Chester County Plan" the live-stock breeders' association of that county, with headquarters at the Farm Bureau, West Chester, Pa., has developed a comprehensive system of improvement. In a letter to the United States Department of Agriculture, William Vandegrift, associate county agent, says that a survey of the live stock has already been undertaken and partly completed. It includes dairy and beef cattle, horses, sheep, swine, and poultry. Prominent among activities now being undertaken by the Chester County Live Stock Breeders' Association are:

Banishment of scrub sires.
Development of community breeding.
Improved live-stock sanitation.
Eradication of live-stock diseases.
Fostering of test associations.
Encouragement of boys' and girls' clubs.
Advertising and sale of live stock.

The slogan of the movement is "Better Bulls and Boars Build Bigger Bank Balances," and the purpose of the general plan is to "put Chester County in the very forefront of live-stock centers throughout the United States." The live-stock breeders of Chester County have been assured of the support of State agricultural officials, of the Grange, and of the United States Department of Agriculture.

Simple Matter Selling Milk in Old Days—Marketing Now Presents Serious Problem

When the majority of people lived in the country or small villages, and nearly everybody had a neighbor with a cow, the milk-marketing problem was simple. Often the entire process consisted in the neighbors' bringing over a pitcher and four copper pennies and carrying away the quart of milk. Or perhaps Johnnie was sent out to deliver milk to half a dozen neighbors at 5 cents a quart, pocketing the extra penny.

Even in the case of big cities, the most complicated system of getting milk to the consumer consisted in the farmer's placing the night and morning product into cans and starting for the city to make his round of from 50 to 200 customers. The machinery of distribution was all in the hands of the producer, and distribution was so direct that the machinery was not to any extent complicated.

Becomes Serious Problem.

With the shifting of population to big centers and the preemption of the former farming land in the suburbs by commuter settlements and estates, the marketing of milk has become a serious problem. The farmer who produces milk is only one step—the initial one—in a system which includes sometimes the jobber, the steam or trolley railway, and the big city distributing agencies. As an illustration of these changing conditions, one city may be mentioned which had 140 separate milk dealers three years ago, but is now almost entirely served by three distributing stations. The successful farmer has learned to adjust himself to this situation.

The principal conditions concerned in the marketing of milk are that it shall be clean, free from adulterations and disease germs, that it shall be cooled properly on the farm and kept cool while it is in the producer's hands. It should be delivered at the railway platform in time for the train and properly protected during transit.

Big city distributing companies and local boards of health have pretty thoroughly impressed upon producers the necessity of keeping milk cool; and if the farmer is inclined to demur he receives an uncomfortable experience by having milk turned back to him. One creamery returned over $2,000 worth of milk and cream to farmers. A milk-distributing plant received more than 50,000 gallons of sour milk in one year.

Getting the milk down to a low temperature will be much easier if you have ice; and this is the season of the year when it is timely to speak of ice storing for dairy purposes. Where a stream or pond is available in the northern section of the United States, natural ice can be harvested and stored at low cost.

Under ordinary circumstances about one-half to 1 ton of ice should be allowed for each cow for cooling cream, or 1½ to 2 tons of ice per cow for cooling milk. The United States Department of Agriculture will send Farmers' Bulletin 1078, giving full directions for storing ice, on request.

There are a number of milk-cooling devices that can be used. An efficient surface cooler, where the milk passes in a thin layer over an ice or brine-cooled surface, can be constructed at small expense, and will pay for itself. There are several types of these coolers, a description of which may be obtained by writing the United States Department of Agriculture for Farmers' Bulletin 976.

To hold milk at low temperature over night during the summer a properly constructed cooling tank is also desirable. A good covered cooling tank also protects the milk from insects, dust, foul odors, and other impurities, and if well insulated also protects the milk from freezing in winter.

Where milk is to be shipped long distances, some method of maintaining low temperature during transit is necessary, and for shorter distances some kind of an insulated can or felt jacket for the can is practically indispensable. Ice, jackets, and insulated cans add to the expense, but usually pay for themselves by reducing spoilage and securing a better market for the milk. With the advent of good roads and motor trucks, cooperative hauling of milk is becoming more common. In some sections large regional cooling stations have been established, to which many farmers haul their milk. Many farmers still haul their own milk to small cities. Milk should be cooled to at least 50° F. before leaving the farm. The farmer can then prevent the temperature of the milk from rising more than a few degrees from farm to shipping point by throwing a wet blanket over the cans just before starting, or by placing cracked ice over the cans during transit.

Loading Milk for Shipment.

Where milk is shipped by train or trolley, loading stations are usually provided. Sometimes these are mere platforms, but often a track is constructed at right angles to the railway with a platform that can be rolled out to the roadside and then pushed close to the car to expedite loading the train. Where milk is to be left for any length of time, these platforms should be covered to keep out the sun's rays.

When the milk is on the train the farmer's part of the distribution stops, but his interest is not ended, for if the milk is soured at the other end of the route or if the health-department test shows an excessive bacteria count due to improper methods of production and cooling, there may be a reaction that will reduce his year's profits.

The production and marketing of milk is exacting and requires a knowledge of modern methods. Success depends on factors once unthought of, and the farmer who meets these exactions is nearer to making successful settlements with the distributing companies than the one who lets things slide.

ISSUES NEW LIST OF DEALERS TO HANDLE IMPORTED COTTON

A revised list of licensees authorized to purchase and use, traffic in, or store imported cotton under the Government rules and regulations has been issued by the Federal Horticultural Board of the United States Department of Agriculture under date of November 1.

Those persons, firms, or corporations in this list licensed as brokers only are authorized to traffic in foreign cotton, but not to use or store such cotton except in a licensed warehouse, and the storage of samples of foreign cotton on their premises is prohibited.

Information as to persons, firms, or corporations whose names were not on the list at the time of revision may be obtained from the board or from its inspectors, who are immediately advised of all additions or changes.

AUSTRALIA WANTS CACTUS INSECTS.

Australia is seeking American insects to assist in eradicating the cactus, which has overrun many square miles of its arable lands. Through the cooperation of the United States Department of Agriculture it has engaged the services of an entomological expert, who will spend a year scouring the cactus regions of Arizona and northern Mexico in search of these insects, which will be shipped to Australia. There are several species which prey on cactus but are not harmful to other vegetation.

Well-Located Sink Boon to Housewife—Saves Much Time, Strength, and Labor

One of the biggest savers of time, strength, and labor in the kitchen is the sink. Yet many women are struggling along with none at all or, at best, a poor and badly placed one. The following suggestions in regard to sinks are given by household specialists of the United States Department of Agriculture.

The size of the family and of the kitchen must determine the size of the sink, but a short sink with ample table and shelf room near it may be more convenient than a long sink. Two smaller sinks, one for the table dishes near the dining room and the other for general use in the kitchen, are very convenient.

No Cracks or Square Corners.

The material should be the best available, nonabsorbent of grease as well as of moisture, and there should be no cracks or square corners to increase the work of keeping it clean. A wooden sink, even when it receives an annual coat of paint, will absorb moisture and grease which attract insects, and is likely to be swarming with bacteria and to "sour" and have an unpleasant odor. Even drainboards of wood are not recommended unless they have a waterproof finish of varnish, oil, or paint. If a wooden sink is necessary, it is better to have it metal lined, provided the sheets of metal, which is usually tin, zinc, galvanized iron, copper or lead, are soldered where they are joined and all parts of the sink, including the tops of the sides, are covered with the metal, so that there is no chance for the wood to absorb moisture. Another plan is to have a cement sink built into a wooden frame and lined with sheet copper or tin.

Iron sinks of good quality are superior to wooden ones, since they do not absorb grease or moisture and are durable. They are easily kept clean if smooth (and they will soon wear smooth), but they have the disadvantage of neither showing dirt nor proclaiming their cleanliness. Unless the front is protected by a strip of wood, the dresses and aprons of the worker are liable to become stained with iron rust.

A soapstone or a slate sink is durable, but sometimes becomes uneven with wear, and if this happens much brushing and scrubbing are required to remove the sand and grease that gather in the depressions when vegetables are cleaned, dishes washed, etc. Like iron, they do not show whether they are clean or not.

Enameled-iron sinks are smooth, last well with careful use, and may be easily kept clean, but they are more expensive than iron. Porcelain sinks are similar to the enameled ones, but their price is almost prohibitive. Perhaps the ideal plan, if cost is not to be considered, would be to have an enameled or porcelain sink for the tableware in the kitchen or the pantry near the dining room and an iron or soapstone sink for the heavier kitchen ware.

The double sinks, with one basin for washing and another for draining dishes, are very convenient, but unfortunately they are relatively expensive. A small sink with a rubber stopper for its escape pipe may be used as a dish pan.

The plumbing should be easy of access, and therefore it is better that there should be no closet under the sink. Hooks or shelves under the sink or near it will accommodate everything usually kept in the dark, often musty, "sink closet" of older kitchens. A "sink closet" can be kept sweet and clean, but it means extra work to do it.

Location of Drain Boards.

If possible, there should be a wide shelf or drain board on each side of the sink on the level with the rim of the latter, one to receive soiled dishes and the other clean ones. Some housekeepers have these covered with zinc. As in all other places where it is used, the metal must be neatly fitted and closely fastened down so as not to leave any chance for loose, rough edges, or to provide breeding places for insects or a lodging place for grease and dirt. If there is no place for permanent drain boards, sliding or hinged shelves may be used. A right-handed person usually holds the dish in the left hand while washing or wiping it, and the dishcloth, dish mop, or towel in the right hand. It is convenient, therefore, to have the dishes move from right to left as they pass from dish pan to rinsing pan, and from rinsing pan to drainer and tray. This should be kept in mind and provision made for soiled dishes at the right and for a drain board at the left of the sink.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended December 8, 1920:

Incubation of Hens' Eggs. Farmers' Bulletin 1106.

Preserving Eggs. Farmers' Bulletin 1109.

Lice, Mites, and Cleanliness. Farmers' Bulletin 1110.

Diseases of Southern Pecans. Farmers' Bulletin 1129.

Alsike Clover. Farmers' Bulletin 1151.

Sugar-Beet Seed Growing in Rocky Mountain States. Farmers' Bulletin 1152.

The Farm Lease Contract. Farmers' Bulletin 1164.

Essentials of Animal Breeding. Farmers' Bulletin 1167.

Meadows for the Northern States. Farmers' Bulletin 1170.

The Flow of Water in Concrete Pipe (Professional Paper). Department Bulletin 852.

The Dry-Rot of Incense Cedar (Professional Paper). Department Bulletin 871.

Insect Control in Flour Mills. Department Bulletin 872.

The Mosaic Disease of Cucurbits (Professional Paper). Department Bulletin 879.

Weight Variation of Package Foods (Professional Paper). Department Bulletin 897.

Hail Insurance on Farm Crops in the United States. Department Bulletin 912.

Live Stock Grazing as a Factor in Fire Protection on the National Forests. Department Circular 134.

Statistics of Cooperative Extension Work 1920–21. Department Circular 140.

Tuberculosis Eradication Under the Accredited-Herd Plan (Herd List No. 3). Department Circular 142.

Tuberculosis Eradication Under the Accredited-Herd Plan (Supplement 2 to Herd List No. 3). Department Circular 144.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the Department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1106; Department Bulletin No. 852; Department Circular 134.

CLEANING UP CURCULIO.

The United States Department of Agriculture has enlarged its force at Fort Valley, Ga., for a general clean-up campaign this winter against plum curculio affecting peaches. Department specialists will make a special study of the hibernating habits of the insect and will direct local work of fall and winter extermination.

Must Prove Their Right to Citizenship—Many Foreign Plants Brought Into U. S.

Scores of emigrants from Africa have recently found their way into the United States. Instead of passing the barrage of examinations at Ellis Island these newcomers will be taken in charge by the Office of Foreign Seed and Plant Introduction in the Bureau of Plant Industry. Each will be given a small section of earth on the experimental plats of the United States Department of Agriculture, where, under the guidance and observation of experts, every one of the lot will be made to show its citizenship qualifications in a practical way. The plant strangers are an odd-looking assortment of fruits, ornamental shrubs, forage grasses, sorghums, fiber plants, etc., quite new to this country.

There is a beautiful little dwarf lemon which originated in China and is now in this country looking for an opportunity to prove that it can bear its delicious lemons in anybody's greenhouse or sunny room as easily and as well as it can in a Chinese garden. Another Chinese specimen is the large-fruited haw, an unusually large variety of the hawthorn family, with a sour juicy fruit that is especially good in compotes and jellies.

Samples Sent Out.

As the new immigrants arrive several members of an older shipment will go out to begin careers of ornamental or economic importance in new homes. The scientists, who have watched these older importations serve their novitiate, are making preparations to send a few samples to various plantations and gardens. Among these is the pistache nut from the Mediterranean region, which has proved its value in California already, where many of these trees are already thriving. The pistache tree of the Levant has a wonderful Chinese relative with ornamental foliage—wine colored in spring and scarlet and yellow in autumn. The nut of the true pistache is much in demand as an article of food, and the timber of the Chinese immigrant is valuable for making furniture.

Brought Nut from Australia.

Southern Florida had no native nuts except the coconut, so the Department of Agriculture brought the Queensland nut from Australia. It flourishes in its new environment, where it is being cultivated and propagated by the Bureau of Plant Industry. The same office is busy with a giant blackberry from Bogota and a dry-land elm from China. The elm has already demonstrated its usefulness, for it grows well in regions that are too arid to support other forest growths. A quality which adds to its value is the ability of this elm to withstand severe windstorms without injury. This feature will enable the tree to grow on the western plains, where the heavy storms uproot and destroy less tough species.

NEW DISCOVERY MAY CHANGE WORLD FERTILIZER INDUSTRY

(*Continued from page 1.*)

handling, the material is briqueted with coke and sand. Briqueting keeps the coke fuel within the mass and retains it until the reaction is well started. Sand or silica is necessary to bring about the chemical reactions and this sand is largely present as an impurity in the Florida phosphate deposits, together with a clayey ingredient which acts as an excellent binder in making the briquettes. Thus the very impurities which make rock objectionable under the old process are turned into an asset.

Economics Effected.

The practical value of the new development is indicated by the fact that in the experimental runs at Arlington the department chemists were able to recover a 64 per cent phosphoric acid (47 per cent P_2O_5) as against the 16 per cent product ordinarily obtained by the sulphuric-acid process. By passing ammonia gas into this phosphoric acid, solid ammonium phosphate, a very concentrated material containing two valuable fertilizer ingredients, results. This material can stand heavy transportation and handling charges. It is also practicable to mix the phosphoric acid with phosphate rock in such porportions as to give a product containing 50 per cent of soluble phosphoric acid. This product is similar in its properties to ordinary 16 per cent acid phosphate, is convenient to handle, and may be used by an intelligent farmer who has the technical knowledge to reduce the quantity placed upon the soil, and to guard against direct contact with seed. It also will permit a material saving in freight to central plants where the product may be diluted or mixed with other ingredients for shorter hauls. The difference between a 50 per cent product and a 16 per cent product means an immense saving in the freight charges, and the release of large quantities of rolling stock and vessel tonnage now engaged in the transportation of phosphate and phosphate rock.

While the actual cost of the new process in a large industrial plant is difficult to estimate with accuracy in the work thus far done, even on a small scale, it was found that the fuel consumption was only about 15 per cent of the value of the product, while with the sulphuric-acid process the cost of the acid used seldom runs below 22 per cent. This factor, together with the reduction of freight charges, justifies the assumption that the new process will be of the utmost importance to the fertilizer industry and to the farmers who are compelled to use a constantly increasing amount of commercial fertilizer.

JUDGING ASSOCIATION BULLS NEW COUNTY-FAIR FEATURE

Something new in county-fair features was reported to the Dairy Division, United States Department of Agriculture, from Greenwood County, S. C., where a show of association bulls was held in connection with the annual Greenwood fair. This show attracted 23 out of a total of 25 bulls owned by eight bull associations in the near-by communities, and these animals attracted much favorable comment among fair visitors.

The bulls were brought to the show at the expense of the fair, and considerable prize money was offered for the winners of the different classes. In addition to the awards for the best bulls in classes under 2 years, 2 to 3 years, 3 years and over, and grand champion bull, prizes were also offered for various special classes, such as best trained bull, bull in best breeding condition, and the best group of bulls from any one association. The judging of these special classes was followed with a great deal of interest, and the excellent condition and case of management of the winning bulls in these classes was an object lesson for some of the onlookers.

As indicated by the number of associatons exhibiting bulls, the bull association movement has made substantial progress in this territory. In Abbeville County, for instance, which was well represented in the show, there are now three associations, and plans laid for next year's work include the placing of 10 more association bulls at certain points, which will make a pure-bred sire available for every cow in the county.

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9,000 MILES THROUGH AFRICA IN SEARCH FOR NEW PLANTS

Dr. H. L. Shantz Studies Native Varieties Adapted to United States.

Brings Back Many Species Not Previously Imported Into United States—Believed Likely That Some May Prove Suited for Development in This Country.

An example of the exploration and research work which the United States Department of Agriculture is doing in its search for new plants available for cultivation in this country is furnished by the recent 9,000-mile exploring trip taken by Dr. H. L. Shantz, agricultural explorer, botanist of the Office of Foreign Seed and Plant Introduction, with the Smithsonian African Exploration.

After New Varieties.

The principal purpose of Dr. Shantz's trip was to study the native agriculture with an eye for new fruits, nut plants, forage crops (especially those adapted to our South and West), new sorghums, and especially wild sorghum grasses of types similar to Sudan grass, which has proved such an important forage crop in the semiarid districts of the western part of the United States that $10,000,000 worth of it was grown last year.

The party, which left New York July 16, 1919, sailed directly to the Cape Verde Islands off the coast of Africa, and from there to Cape Town, where they arrived August 13. From there the journey of nearly 9,000 miles was made almost entirely through the heart of Africa, sometimes 1,000 miles inland, with occasional expeditions to the coast for observations of Zanzibar and other islands, and at Lourenzo Marques and Beira.

Much of the country which Livingstone painfully traveled something more than half a century ago is now open to the traveler with comparative comfort on the South African Railway. There are still fastnesses, however, where the party was compelled to go 700 or 800 miles away from any railways and often through the jungle where improved roads were unknown.

The Cape to Cairo road is still to a large extent as much a creature of the imagination as when first conceived in the mind of the South African developer, Cecil Rhodes. Long stretches were covered by steamer, many of them primitive transportation systems, where the traveler merely bought passage, providing himself with bed, shelter, food, and even the wood with which to cook it.

Will Doubtless Prove Helpful.

The expedition has given to the Department of Agriculture a rather intimate knowledge of the agriculture, not only of the white but of the native tribes, of the regions visited. Many of the practices there observed will doubtless prove helpful in connection with practice in this country. Dr. Shantz also formed the acquaintance of many agriculturists and men in various sections of the Dark Continent who can in the future be useful to the department by sending in plants which are desirable and which could not otherwise be secured. The direct tangible results consist of seeds or living material of more than 1,600 different species or varieties of plants, many of which had not previously been imported into the United States, and from which it is only rea-

(*Continued on page 15.*)

AGRICULTURE A NATIONAL PROBLEM.

A sober national thought with regard to the importance, the absolute necessity, of a sustained agriculture in this country is imperative. There is, perhaps, no single solution for the situation which the farmers are now facing, but there are many steps which can and should be taken to place our agriculture on a more satisfactory basis and to stabilize the business of farming, not in the interest of the farmers alone but in the interest of the Nation as a whole. The matter is of such tremendous importance to our entire population that it should be recognized everywhere as a national problem and dealt with as such.—Annual Report of the Secretary of Agriculture.

TELLS ABOUT COOPERATION OF AGRICULTURAL FORCES

Farm Bureau a Constructive Movement, Says Extension Work Chief.

Created to Promote Farming, Home, and Rural Life, and to Make Agriculture More Profitable, He Says—As a Public Institution.

"The farm bureau was created to promote agriculture, home, and rural life movement, to make farming an efficient and profitable business, to make rural home life fuller and richer, and to improve the community life of the country as a whole," Mr. C. B. Smith, Chief of the Office of Extension Work, North and West, of the United States Department of Agriculture, told the conference of extension agents at Lafayette, Ind., November 3.

Encouraged Farm Bureaus.

"The United States Department of Agriculture, through the Office of Extension Work, North and West, is more largely responsible than any other agency for the development of farm bureaus in this country," declared Mr. Smith. "Their organization, in cooperation with the colleges of agriculture, was begun as far back as 1911, three years before the Smith-Lever Act was passed. They were intended to be then, and fundamentally are to-day, county extension organizations or institutions. Up to the time of our entrance into the war, there were a number of forms of these county extension organizations, generally, but not always called farm bureaus; but with the giving to the United States Department of Agriculture of large sums of money for the completion of the county-agent system, the department, in cooperation with the colleges of agriculture, as a war measure, aggressively encouraged the development of a rather uniform and definite type of farm bureau.

"The underlying reasons for bringing into existence a new rural organization when there are a number of substantial farmers' organizations already in existence were:

"When the department and the colleges were charged by Congress with the administration of the agricultural extension act neither clearly knew the exact agricultural conditions in each of the counties and localities of the United States. They therefore did not know just what form of extension work was most needed in any particular locality. This was particularly true in the Northern and Western States, where agriculture is greatly diversified. The logical thing to do, therefore, as the matter appeared to them, was to employ a man known as a county agent thoroughly trained in the science of agriculture and familiar from experience with farm practice, and locate him in an area not larger than a county and let him find out from personal examination what the agricultural situation in that county might be, then cooperate with the farmers in putting on demonstrations to show better methods in the particular phases of agriculture needing attention in that county. That was the first big idea in the organization of county farm bureaus, and a step nearer the farmers than the department or the colleges had ever before come.

Farm Bureau Develops.

"Very soon it was seen that if the county agent was to learn in any comprehensive way the agricultural situation in the county he must counsel with farmers in every section of that county—men who had lived their lives there and made their living from the farm and therefore knew its peculiarities intimately, and many of whom also had acquired facts and skill not generally applied in the community, but which were worthy of much wider application. That was the second big idea in the development of the farm bureau.

"It was then discovered that if anything was going to be accomplished in the way of improving agriculture and rural conditions, not only must the trained scientist and the farmers counsel together, but they must formulate a fundamental and continuing policy of work and development in the county, not only for one season but for a whole year or period of years. That was the third big idea in the farm-bureau movement, viz, the sitting in council of the trained agents of the Government with trained farmers entirely familiar with local conditions and local problems, and both contributing to the working out of such a long-time program; cooperation between farmers and agents of the Government in the closest and most intimate way.

"It soon developed that there were not sufficient Federal and State funds available under the law as enacted for the employment of a full-time man in every county of the United States, and since the work done in the county was in the interest of the entire county it seemed only logical to ask the county and the farmers to help the Federal Government and State college of agriculture finance the work. The work, therefore, became essentially a public work, financed for the most part from the public funds, and where this did not suffice, the farmers were so thoroughly convinced of its value that they went down in their own pockets and contributed toward the support of this work which had been authorized and in part financed by the National and State Governments.

Farm Bureau a Public Institution.

"The farm bureau, therefore, as thus developed, is practically a public institution, developed at the direct suggestion of agents of Government for the purpose of creating a channel through which the practical results of research work of Government might with certainty reach the people for whom it was intended.

"Why did the Federal and State Governments develop such an organization? Why did not they cooperate in extension work directly with the Grange in counties where the Grange is strong, or with the Farmers' Union in counties where the Union is strong, or with the Equity where the Equity is strong? The reason is simple enough. Practically all of these are secret organizations, or are exclusive organizations, and since the work of the Federal and State Governments is financed by all the people and in the interest of all the people, these institutions felt the necessity of developing a nonclass, nonsecret, noncommercial, and permanent institution open to all the farmers in the county, through which all could find expression and deal directly and in an organized way with the State colleges and Federal Department of Agriculture.

"Besides, none of the farmers' organizations with which the department was acquainted had been developed with the idea of extension work in mind, and the agents of the Government hesitated to take up work with them, or propose work to them which would necessarily involve a redirection of their organization, to say nothing of the jealousies which might have been created by apparent favoritism in the selection of one organization in preference to another.

"The county farm bureau, therefore, was created as and has become, essentially, a public institution very much like a college of agriculture. A name which better describes its function properly would be 'County Extension Institute' or 'County Agricultural Extension School,' since the farm bureau is essentially an educational and teaching institution—a teaching institution primarily for adults who have left school, and one of the highest type that the world has ever seen on so large a scale. The teaching is done by the drawing-out process rather than by the filling-up process. It is done by the people themselves working as a full partner with the trained agents of Government, who in cooperation with these trained agents develop programs of improvement out of their own needs, who assign their own tasks, do the work themselves, and thereby provide for their own development in the only way that any people ever has made or can make permanent progress.

"It is beginning to function in the county very much as the agricultural college functions in the State. From many standpoints the county farm bureau is essentially a subcollege of agriculture with all its class-room work done out on the farmer's farm, or in his barns or home, or fields or creamery, or in the market place. The work is done essentially on the seminar plan with the teacher on an equality with the students, and all associated together in discovering the particular needs of that community and together working out plans for their solution.

Assists in Many Ways.

"If the term 'county agricultural institute' or some similar term will clear up in the minds of the people the fact that the farm bureau is not just another competing farmers' organization, but a new kind of adult teaching institution instead, the adoption of some such change of title merits consideration.

"The county farm bureau, like the State college of agriculture, lends its assistance in every way to building up any and all farmers' organizations within the county, along any legitimate lines, and in developing new organizations in the interests of farmers. If the farmers of the county desire to organize a commercial organization such as a live-stock shippers' association, the farm bureau, through its trained cooperatively employed agents, would aid any group of farmers to organize such an association, counseling them as to the advantages, advising them as to the constitution and by-laws which have proved effective, pointing out the difficulties which they might expect to encounter, etc., but leaving to that particular group of farmers themselves the actual handling of the funds involved and the actual responsibility through their own officers for the progress of the work, giving them, however, counsel at every step.

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TRACTOR PRODUCTION IN U. S. FALLS SHORT OF ESTIMATES

Reports from 80 Manufacturers Show 164,590 Tractors Made During 1919.

Labor Troubles and Shortage of Material Partly Responsible for Decrease Below Estimated Output—Some Companies Have Discontinued Making Tractors.

In an investigation made by the Bureau of Public Roads, United States Department of Agriculture, of the production of tractors in the United States during 1919, reports from 80 manufacturers show that they manufactured a total of 164,590 tractors during the year. The number actually manufactured during the year was only a little over one-half of the total production estimated in reports made to the Office of Farm Equipment Control, United States Department of Agriculture, in January and February, 1919. Labor troubles and shortage of material, together with the fact that some of the companies discontinued the building of tractors, accounts in part at least for the decrease in production below the estimated output.

Only 80 Companies Made Machines.

The reports also gave the number sold in the United States and for export, and the number on hand, in transit, in branch houses, and in the hands of dealers unsold on December 31, 1919. Five of these manufacturers built only tractors of six-belt horsepower and less. In all, reports were received from 156 companies, but only 80 had manufactured machines during the year. It is believed that the total number of machines manufactured by these 80 firms represents at least 95 per cent of the total tractor production in the country during the year. The number of tractors of different sizes built by these companies during the year 1919 is as follows:

Makers' rating belt horsepower.	Number of tractors built.
6 and less	3,760
9, 10, and 12	1,901
16 and 18	22,012
20 and 22	94,633
24, 25, and 26	15,546
27, 28, 30, and 32	17,597
35 and 36	2,433
40, 45, and 50	1,954
60 and over	1,624
Not given	3,000
	164,590

The following is a summary of the reports received from the manufacturers for the years 1916 to 1919, inclusive:

	1916	1917	1918	1919
Number manufactured	29,670	62,742	132,697	164,590
Number sold in the United States	27,819	49,504	96,470	136,162
Number sold for export	.....	14,854	36,351	19,693
Number on hand Dec. 31	.....	15,525	15,401	27,740

SEES NEED FOR ENLARGING CROP AND STOCK REPORTING

The importance of enlarging the crop and live-stock reporting service of the United States Department of Agriculture was emphasized by the Secretary of Agriculture in his annual report to the President. Lack of adequate appropriation, he said, had made it necessary to eliminate certain features of this work, which should now be restored and enlarged.

"The data collected by the 1920 census will soon be available as bases for crop and live stock estimates during the next 10 years," he said, "and the expansion should be provided for without delay. The crop and live-stock reporting service should be greatly enlarged; farm surpluses should be ascertained periodically, and the essential data should be published more promptly and in such form as to make them more readily understood and utilized. Estimates of the funds required to enable the department to accomplish these purposes will be submitted to the Congress."

FINDS INTERESTING SYSTEM OF INTENSIVE FRUIT CULTURE

Intensive fruit culture to an extent scarcely to be found in this country was noticed at Cambridge, England, by Prof. L. C. Corbett, of the United States Department of Agriculture, who has just returned from a European mission. A concern there has an orchard of 1,400 acres, so densely set that machine cultivation or the introduction of a horse-drawn spraying machine is impossible. Apple trees are set 2 rods apart and are headed high, 6 or 7 feet from the ground, the spread of limb being more than 6 feet from the trunk. Between the apple rows, plum trees are set midway and also headed high; beneath the plum and apple trees, currant and gooseberry bushes are set in rows 3 feet apart.

Before the war culture was by hand, even to the spading. When the war took away man-power the owners saved themselves by introducing small "wheel-barrow tractors," manufactured in the United States, which have a tread of only 18 to 20 inches. The density of the orchard, of course, precludes horse-spraying. To meet this condition a complete waterworks system has been run through the roadways, which are placed at intervals, and lime-sulphur mixture or Bordeaux mixture is pumped through the mains from a central power plant, spraying 200 acres. The mixture is taken off by hose connected at intervals. The company owning this orchard has a large preserving plant for the manufacture of jam when the market is poor for plums and apples.

In Lombardy and Normandy, on the contrary, apple culture appears to be incidental to pasturage. The trees are set 50 or 60 feet apart and are pruned high so as to be out of the way of stock. Apples of northern France are largely used for cider, in the manufacture and blending of which the people are as expert as in the manufacture of wine.

PROPER FEEDING BRINGS TOP PRICES FOR SOUTHERN HOGS

Information secured by the Bureau of Markets, United States Department of Agriculture, indicates that southern hogs will command prices as high as those paid for hogs from the corn belt if they are properly fed and handled. Nearly 6,000 hogs from a single owner in Mississippi have been received at the National Stock Yards, Illinois, within the past few months and all were firm, finished porkers, which sold well in line with the best that came from other sections of the country. A representative of the Bureau of Markets made some inquiries into the manner in which these hogs were fed. He discovered that the same owner has feeding pens in Iowa as well as in Mississippi, and that he bought his young pigs and fed them a mixed grain ration in connection with corn and tankage. All the animals showed intensive feeding and weighed 250 pounds or over when they arrived at the market.

It would be especially advantageous to the southern farmer to study the use of well-balanced grain rations and the complementary adaptation of peanuts and velvet beans, which can be grown so abundantly in that section.

Twelve carloads of hogs were received from a single Tennessee owner at the same stockyards. These animals were of a distinctly southern type, says the Bureau of Markets representative, but they were well finished on corn, and sold readily at the top of the market, despite the fact that they came from the so-called "doubtful territory." The owner received a check for $72,417, the largest ever paid to a patron of that market for a single shipment.

Secretary Sees Serious Consequences As Result of the Personnel Situation

Important units in the United States Department of Agriculture are in danger of going to pieces because of lack of funds to prosecute the work at hand or because present limitations on salaries make it impossible to maintain a sufficient personnel to conduct their operations effectively, says the Secretary of Agriculture in his annual report to the President.

"This," he continues, "is no exaggeration. In one of the most important bureaus—one dealing with serious economic problems—8 of the 16 divisions are without directing heads because the vacancies could not be filled at the available salaries. One-half of the work of the bureau is now without adequate leadership. A similar situation exists in many other bureaus of the department, and unless it is shortly remedied stagnation will be the inevitable result. Hope of early justice in the matter of salaries and better equipment for work have encouraged many men and women to stay with the department so far, but they can not be held indefinitely if they are to meet with repeated disappointments.

Has Reached Alarming Stage.

"The turnover in personnel has reached an alarming stage. Highly trained and experienced specialists and administrators are leaving the service for salaries two, three, and four times as much as the department can pay them, and many of them can not be replaced at anything like the compensation that can be offered under existing limitations. We have a record of the salaries received in outside employment by 528 of the scientific and technical employees who left the department during the fiscal year 1920. This record shows that 383 of these employees are receiving from other public institutions and commercial concerns compensation ranging from $500 to $7,000 more than they were paid by the department.

"It is understood, of course, that the Government can not meet commercial competition. The scientific and technical men of the department do not themselves expect it. As a general rule, they are willing to accept less in order that they may remain in strictly scientific work, but they certainly should be paid salaries sufficient to keep themselves and their families in reasonable comfort. Otherwise the department's force will continue to be drained of many of its most efficient workers. It can not be subjected to this steady draft upon its trained personnel without serious impairment of the service, nor can it utilize the funds appropriated by the Congress most effectively with a constantly disintegrating organization and an increasing percentage of new and relatively inexperienced personnel.

Importance of Research.

"The department should be in position to retain its scientific and technical workers over long periods. From the standpoint of the public service, a man once embarked upon an important field of investigation should remain there if he is capable and efficient. If he leaves to accept other employment, he carries with him much of the information he has acquired in the progress of his work, information which enriches him in experience, but which can not possibly be put on record. A new man, continuing the work, must, in many instances, go over a considerable part of the field already covered before he reaches the point where his predecessor left off.

"We are at a stage of our agricultural progress where fundamental research and investigation are more essential than ever before. We are confronted to-day with serious problems of the most pressing nature about which we know relatively little. No one acquainted with the situation will deny that it would be the part of wisdom to concentrate the best brains of the country on these problems and to provid adequate facilities for carrying on the work in the most comprehensive manner."

SORGHUM GROWN FOR FORAGE SHOWED INCREASED ACREAGE

The growing of sorghum for forage in this country has increased until the 1918 crop amounted to more than 5,000,000 acres, according to Farmers' Bulletin 1158, just issued by the United States Department of Agriculture. Most of this acreage was located in the Southeastern States and in the southern half of the Great Plains.

Sorghum is most useful as a hay crop in the Southern States because of its certainty of producing a crop and on account of the failure of ordinary hay crops, such as timothy and alfalfa, in that section. Both the sweet sorghums and the grain sorghums are excellent silage crops. The department advises that stockmen in the Great Plains area can avoid the loss of thousands of cattle by feeding sorghum silage which has been stored at a small expense in pit silos.

The principal varieties of the sweet sorghum, considered from a forage standpoint, are the Minnesota Amber, Red Amber, Orange, Sumac, Honey, and Gooseneck. The grain sorghums most valuable for forage are the Blackhull, Red, Pink, and Dwarf kafirs.

The most serious disadvantage in the use of sorghums as a pasture or soiling crop is the danger of prussic-acid poisoning. Almost every farmer who has grown sorghum as a farm crop knows that it is dangerous to allow cattle to eat even a small quantity of green sorghum before it has matured. The wild animals of Africa are said to avoid sorghum instinctively while it is young, refusing to eat it until it has ripened; but domestic animals in America show no such intuition. No sure remedy for prussic-acid poisoning has been found. Doses of glucose (corn sirup) or large quantities of milk will prove beneficial if given in time. Less trouble is experienced in the Southern States than in those farther north.

Sorghum yields about equally well whether planted in close drills or rows 40 inches apart, the department finds; but the cultivated rows are most dependable in seasons of low rainfall.

CONCRETE PIPING A SUCCESS WHEN PROPERLY CONSTRUCTED

Poor construction has brought concrete piping into disfavor, but when properly made such piping is undoubtedly a success, say irrigation engineers of the Bureau of Public Roads, United States Department of Agriculture. It was at first thought that concrete could be used for low-head pressures only, but better methods of construction have convinced the engineers that its use is not limited in this regard. In this country concrete piping is now used to withstand 100-foot head pressures, and in Europe lines have been built which endure pressure heads of several hundred feet. Steel reinforcement is generally used when the heads exceed 15 or 20 feet.

Department Bulletin 852, prepared by the Bureau of Public Roads, on the adaptation and use of concrete piping, points out that the carrying capacity lessens very little over a period of years. After 15 years' service such a pipe showed a deposit only one-sixteenth of an inch thick on the inner surface. Another advantage possessed by this material is that the pipe can be constructed on the ground where it is to be laid, thus simplifying transportation difficulties which might occur if the heavy pipe sections had to be carried to the site of a drainage ditch or an irrigation project.

Crimson Clover Adds Nitrogen to Soil—An Annual Plant of True Clover Group

A large part of the value of crimson clover lies in the ability which it shares with other clovers to utilize the nitrogen of the air and add it to the soil, say specialists of the United States Department of Agriculture. When encouraged to do this, crimson clover is a valuable soil improver. If it is planted on rich land it will utilize the nitrogen already present in the soil and is not stimulated to contribute anything to its own support or to the support of other crops.

Crimson clover is a winter annual plant of the true clover group. It is also known as scarlet clover, French clover, Italian clover, and German clover. It is the only annual true clover that is of more than incidental agricultural importance in the eastern United States. It owes its place in the crop rotation of the Atlantic Coastal Plain to the fact that it can be planted when the land is not occupied by ordinary summer crops. Usually it is sown following a grain crop or in an intertilled crop in late summer, and is ready to harvest for hay, to pasture, or to turn under as a green manure crop in the spring. South of central Delaware it may even be cut for seed and the stubble plowed under in time for seeding a quick-maturing strain of corn. Grown in the off season of the year, crimson clover is one of the most economical legumes that can be produced for green manure, and it has been largely used for that in the regions to which it is adapted.

The many ways by which this crop may be utilized are discussed by plant specialists of the United States Department of Agriculture in Farmers' Bulletin 1142, "Growing Crimson Clover."

An Early Importation.

Though it was brought from Europe to this country in 1818, its value as a forage plant was not recognized until about 1880. The plant does not withstand either extreme heat or cold, and is best adapted to a soil that is not very rich and to a climate where the winters are not severe. Ordinarily it can not survive the winter in latitudes north of southern Pennsylvania, while in some of the Southern States it is frequently killed by dry, hot weather in the fall or spring.

Its growth is comparable to that of winter wheat. Planted in the fall, it lies more or less dormant throughout the winter and completes its growth in the spring. If the summers are not too hot it can sometimes be planted in the spring and grown as a summer crop, but for this purpose other clovers are usually preferred. Corn in the summer with crimson clover in the winter is a cheap and convenient method of growing a cash crop and a soil-improving crop in the same year. The reputation of crimson clover as a crop increaser is largely based on this simple rotation. Instances are by no means rare where the yield of corn has been gradually increased from 10 bushels to as high as 70 bushels to the acre by this means. The difficulty which this method presents is the possibility of failure of the young clover through drought. The growing corn makes a heavy demand on the soil moisture, and if there is not enough water for both clover and corn the latter gets the larger share and the clover plants are likely to succumb.

Crimson clover may be seeded in practically any of the cultivated truck crops, which receive their last cultivation from 8 to 12 weeks before the first frost. It is not wise to seed clover in late potatoes, sweet potatoes, or other root crops, as the digging in the fall practically destroys the clover. Neither does it do well when sown into cowpeas, sorghum, or watermelons, owing to the heavy shade cast by those crops. The most common cause of failure to obtain a stand of crimson clover is a period of hot, dry weather occurring after planting.

Result of Test Planting.

The roots of crimson clover are inoculated by the same strain of bacteria which occurs on the roots of all true clovers; consequently a field which has produced a good stand of red, mammoth, Alsike, white, hop, Carolina, rabbit's foot, or buffalo clover is usually sufficiently inoculated for crimson clover. A test planting yielded 4,037 pounds of crimson-clover hay on one inoculated plat and 6,100 pounds on another. On two corresponding areas which were not inoculated the first plat yielded 761 pounds and there was nothing on the other. Methods of inoculation, seeding, the choice of seed, and the treatment of the stand are fully described in the bulletin, which may be had upon request of the United States Department of Agriculture, Washington, D. C.

TO OUTLINE COTTON-DUSTING PROGRAM.

The United States Department of Agriculture will participate in a conference called by the Plant Protection Institute, to be held at the Chemists' Club in New York, December 6 and 7, to outline a program for cotton dusting in 1921. Treatment of cotton with poison dust, principally calcium arsenate, has been of such recent development as a means of combating the boll weevil that often impracticable methods have been employed for its application, many of which were due to improper advice given by representatives of manufacturers who were not thoroughly informed on the problem. The present meeting is to provide a clearer understanding of the work and to outline an educational campaign for 1921, which should result in the farmers having the best advice and supervision possible in their poisoning efforts.

SHOULD COMPLETE SERVICE.

Counties alone are spending $4,780,000 a year toward the cooperative extension work in agriculture and home economics under the Smith-Lever Act, the Secretary of Agriculture announced in his annual report to the President. In 1914 they were contributing only $780,000. He cited this to show how the farmers themselves are supporting the extension service.

He declared that the broad developmnt of the system is one of the most notable events in agriculture in recent years. There are now 2,000 agricultural agents, 800 home-demonstration agents, and 300 county leaders of boys' and girls' clubs.

The Secretary urged that the system be completed as rapidly as conditions warrant, by reaching the 650 rural counties which now have no agricultural agents and 1,800 without home-demonstration agents, and by extending farm boys' and girls' club work.

IMPROVES HIS PUREBREDS.

Of 151 head of live stock on a farm in Shenandoah County, Va., all but 5 are of pure breeding, the United States Department of Agriculture is advised. Cattle and swine are the principal classes of animals kept.

In participating in the "Better Sires—Better Stock" campaign, the owner of these animals states that he castrates all inferior and surplus hogs, keeping none for breeding that can not be registered. "I castrated 26 in one day," he adds. "Three of these were good enough yearling boars to head most herds." By keeping only those animals for breeding which are of superior type, this farmer is gradually improving the quality of stock on his farm.

Borer Helps Increase Paper Shortage—Destroys Whole Plantations of Trees

A gray-green beetle has much to do with the present shortage of paper. The beetle is the adult form of the aspen borer, a grub which often destroys whole plantations of the trees that are so essential to the pulp industry.

The beetle gnaws a slot in the bark and deposits one or two eggs therein. From these eggs come the trouble-making grubs that gnaw into the heart and sapwood and so riddle the tree that the first strong wind snaps the weakened timber.

Poplar and Aspen Objects of Borer's Attacks.

Poplar and aspen—both very fast growing trees, and for this reason very valuable to manufacturers—are the object of the borer's attacks. The imported Lombardy poplar and the comercial cottonwood of the Mississippi Valley are very seldom injured, but all other native varieties are damaged by the grub.

In some areas where poplar and aspen predominate, the standing dead, fallen, and dying trees exceed 50 per cent of the total stand. A count made by the United States Department of Agriculture on a two-acre area of aspens in Colorado gave the following figures:

Total number of trees	667
Number of living trees	260
Number of dying trees	34
Number of dead trees	340
Number of infested trees	33

Deformed trees, 40 per cent of total.

Infestation by the borer is most prevalent between altitudes of 6,500 and 8,000 feet. It has not been found above 9,000 feet.

Methods of Control.

The Department of Agriculture has carried out control experiments in various infested localities, and the experts find that the insect can be controlled, if not entirely eliminated, by either of the following methods: The first consists in destroying the insect by cutting the brood trees. Brood trees are individual trees attacked several years in succession, and are readily identified by the scarred trunks and deformed branches. These are the breeding points of the borer, and a man with an ax can cut and pile 50 such trees in a day. The trees are piled and burned, or split open so that the wood is exposed to the sun.

The other method, not practical in the forest but applicable to shade trees, is the application of creosote or carbolineum to the egg scars. This should be done in October after the adults have deposited their eggs.

Further information regarding the life history, habits, and control of the poplar borer is contained in Farmers' Bulletin 1154, which may be had upon request of the department at Washington, D. C.

CONDUCTS LIVE-STOCK SURVEY.

Live-stock owners in Tippecanoe County, Ind., are listing with their county agent all pure-bred stock kept, including cattle, horses, swine, sheep, and poultry. The survey blank on which the information is supplied is the forerunner of an effort to develop more fully the live-stock interests of the county. The blank also contains spaces in which farmers may list the number and kind of pure-bred live stock wanted or for sale.

Simultaneously with this survey, County Agent Walter V. Kell is encouraging enrollment of Tippecanoe County farmers in the "Better Sires—Better Stock" campaign. This campaign is conducted jointly by county and State agricultural workers in cooperation with the United States Department of Agriculture and is aimed to improve the average quality of domestic animals in this country.

RAPID INCREASE IN BEAVERS IN U. S., FOREST RANGERS SAY

Beavers in the national forests have increased rapidly within the last few years, a count made by rangers of the Forest Service, United States Department of Agriculture, shows. Two years ago in the Cochetopa Forest in southwestern Colorado there were 200 beavers, estimating 4 or 5 inhabitants to each house, a conservative estimate. This year there are 12,000 of the animals. This rapid increase of family among the beaver tribe insures plenty of the popular fur for milady's wear for an indefinite time if the laws which now protect the animal are not relaxed too much.

Beavers at present have complete protection by law in 24 States, and where they have increased in large numbers they are in some instances becoming a nuisance felling trees, damming up irrigation ditches, and causing other damages to such an extent that State game officials issue permits to trap them for their fur or make arrangements to have the surplus trapped and transplanted in other sections. Because of the trouble they caused in the Cochetopa National Forest this year a State trapper was furnished by the State game warden to trap for a time these little civil engineers of the animal world. In one month he caught 132 beavers, the skins of which were sold for $2,640. It is estimated that if 20 per cent of the beavers in the Cochetopa Forest could be trapped annually, plenty still would be left on the reserve for breeding purposes, and a substantial income to the State derived each year from the sale of pelts and live animals.

The supervisor of one of the national forests in Montana is now asking permission to reduce the number of beavers in the forest under his jurisdiction through the destruction of their dams. By damming up the water the animals have ruined a meadow needed for pasturing Government horses.

SON'S FAILURE SHOWS DAD WORTH OF PUREBRED STOCK

This is the story of a pig-growing contest that centered between two boys of Onslow County, N. C., sent to the United States Department of Agriculture by a county agent, as an illustration of the value of purebred stock as against scrub animals.

Leslie Williams and Herman Gurganus are boys of the same age, living near together and attending the same school. They became interested in the pig-fattening competition in the local boys' club, and enlisted the services of the county agent to induce their fathers to buy them pure-bred pigs to start with.

One father ordered the blooded porker; the other gave his son an apparently promising homegrown animal of uncertain ancestry, agreeing that if any other boy in the club beat his son's record he would buy a purebred pig.

The two boys kept expense accounts and weighed their pigs once a month. The purebred pig weighed 37 pounds at the start, May 10, and the other pig 50 pounds.

The final record was made five months later, October 10, three days before the county fair. The purebred pig had consumed $17.60 worth of middlings, corn, peanut meal, and tankage, and made a gain of 131 pounds. The other pig consumed $15.90 worth of corn and gained only 26 pounds, costing more than 60 cents a pound.

The unsuccessful young pig owner was keenly disappointed, but took heart when his father made good his agreement and put in an order for a purebred pig, not only for the boy but for himself.

Believes Nation's Stability Endangered If Agriculture Begins to Lose Ground

Declaring that "when American agriculture begins to lose ground, the political stability of the Nation is endangered," the Secretary of Agriculture in his annual report to the President, discussed the drift from the farms to the cities and emphasized the necessity of doing every thing possible to make farming profitable and country life more attractive.

"Life on the farm and in the rural community," he said, "gives rise to problems the solution of which is of vital importance to American agriculture and American civilization. It has been demonstrated that these problems are susceptible of scientific investigation. Valuable studies already have been made by the Office of Farm Management and Farm Economics, and they should be enlarged and others instituted, including especially studies relating to the human aspect of tenancy and landlordism, migration from farm life, population groups, and community planning.

Drift from Country to Urban Life.

"In our country agriculture, manufacture, transportation, merchandising, and professional service—strong competitors with one another for both capital and workers—are all expected to hold their own. The history of agriculture seems to show, however, that farming is in periodic danger of losing its grip on both capital and workmen and of allowing them to slip away into city industries. Statesmen have always viewed with alarm the tip of the scales from farming to industry and from country life to urban life. When the farm loses its balance to the city, the Nation is threatened with a food shortage or with dependence upon foreign countries for essential foodstuffs. But the shortage of food is not the only danger. When American agriculture begins to lose ground, the political stability of the Nation is endangered.

"The returns from the 1920 census are not yet sufficiently complete to make a full statement of what has occurred during the last decade in the shifting of populations between city and country. The report on somewhat more than one-third of the counties of the United States, however, indicates an actual reduction in the rural population in many counties of New England and New York, in some parts of the South, and in the heart of the corn belt. Some of them lost in rural population during the preceding decade, while others are losing for the first time now. On the other hand, many rural counties in the Northwest, the West, the South, and the Coast States have been gaining.

"There is every reason to believe that the same causes which account for a relatively decreasing agricultural population in former decades have been at work during the past 10 years. The increased standards of living of the American people as a whole have caused a great expansion in all industries centering in cities, and the industrial bid for workers, accelerated by conditions during and immediately following the war, has been a strong magnet exerting a pull upon workers in agriculture.

"The following table shows the percentage of the total number of persons employed in all American occupations who were engaged in agriculture from 1820 to 1910:

1820	87.1
1840	77.5
1870	47.5
1880	44.4
1890	39.2
1900	35.7
1910	32.9

"We may expect for 1920 a lower percentage than for 1910. It will not be surprising if the complete returns show that only 30 per cent of our workers are farmers. It is true, of course, that increased efficiency in farming operations resulting from the use of new and better machinery and the application of scientific knowledge has consistently lowered the demand for labor in certain kinds of farm work and that the labor thus released has been the first to yield to the call of the city. It is a well-known fact also that Army life and its accompanying set of new associations detached from farming and from rural life a considerable number of farm youth. Whether this loss is a permanent one no one can say, but in any event it must be considered unusual.

The Real Concern.

"The real concern in America over the movement of rural population to urban centers is whether those who remain in agriculture after the normal contribution to the city are the strong, intelligent, well-seasoned families, in which the best traditions of agriculture and citizenship have been lodged from generation to generation. The present universal cry of 'keep the boy on the farm' can and should be expanded into a great public sentiment for making country life more attractive in every way. Neither force nor exhortation will keep people in the rural districts if they are to be deprived of the benefits of modern social, educational, and other opportunities. But when farming is made profitable and when the better things of life are steadily brought, in increasing measure, to the rural community, so that farm families need not give up farming in order to satisfy their desires for the best that modern civilization affords, the great motives which lead youth and middle age to leave the country districts will be removed. In order to assure a continuance of the best strains of farm people in agriculture, there can be no relaxation of the present movements for a better country life, economic, social, and educational."

PECAN DISEASES NOT FOUND TO BE ON SERIOUS INCREASE

The suggestion by various writers that diseases of the pecan may be expected to become much more serious in time is not shared by specialists of the Bureau of Plant Industry of the United States Department of Agriculture. In a bulletin now available for distribution, entitled Diseases of Southern Pecans, they declare that their facts do not show that pecan diseases are on the increase.

On the contrary, the facts indicate that if due regard is given to the suitability of soils, varieties, and the care of the orchards after they are planted, losses from diseases may be expected to decrease. Growers are urged to use discrimination and care in selecting scab-resistant varieties for planting, and to set the trees only in soils of uniform formation and good fertility. Careful attention to these factors, it is believed, will eventually result in a decrease in rosette, a disease particularly troublesome in the planted orchards of the Southeast.

The bulletin—Farmers' Bulletin 1129—is intended to aid nurserymen, growers, and prospective growers in obtaining a more thorough and definite knowledge of the various diseases of the pecan, the extent of their distribution, and their relative importance. Where remedies are known they are given. Care is taken to keep observed facts separate from mere opinions. Copies of the bulletin may be had upon request of the department at Washington, D. C.

In the past year the United States Department of Agriculture obtained 35 patents on inventions, which have been dedicated to the use of the public. Work of obtaining the patents was conducted by the Solicitor's Office.

Weekly News Letter

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FARMING NOW INVOLVES BIG FINANCIAL PROBLEMS

"The financial problems of the farm have become more and more involved, until to-day they rank in importance with the financial problems of commercial industries," declared the Secretary of Agriculture in his annual report to the President.

"While an excellent beginning has been made in the study of farm-mortgage credit," he said, "farm insurance, and personal credit, sufficient funds are not available to deal adequately with many matters about which information is needed, including the methods employed and the results obtained by farmers in attempts to improve their credit through united and cooperative action; life insurance in relation to farm finance, covering the use of life insurance contracts as a means of improving the credit of the farmer; methods of taxation as they affect agriculture; crop and live-stock insurance, the need of such protection and the agencies offering it; and the place of accident and liability insurance in farming operations.

"The possibilities of well-directed cooperative effort among farmers are well illustrated by what has been done in the field of mutual fire insurance. There are at present nearly 2,000 farmers' mutual fire insurance companies in the United States, with outstanding risks aggregating $6,000,000,000. This enormous volume is carried at an average cost, for the country as a whole, of only 25 cents per $100 per year, and in individual cases companies of this kind have furnished high-class protection to their members for half a century or more at a cost of less than 10 cents per $100 per year. This result has been achieved in part by the elimination of unnecessary expenses of operation, of the so-called moral hazard, and of many of the physical hazards involved in farm risks.

"While the department has rendered much assistance in connection with this form of cooperation, through the preparation of a suggested classification of farm risks and suitable record forms which embody the methods and practices that have proved to be the most efficient in conserving farm property and in reducing the cost of insurance, a great deal remains to be done. In many States cooperation for insurance and credit purposes is as yet little understood or practiced."

DISCUSS STEPS TO BE TAKEN AGAINST CORN-BORER SPREAD

A conference between representatives of the United States Department of Agriculture and Canadian officials was held at Guelph, Ontario, November 17 and 18, to consider better methods of control for the European corn borer, which, according to latest surveys, has infested a territory of about 3,800 square miles. One infested territory extends for about 34 miles west of the Niagara River, along the north shore of Lake Erie and about 10 miles inland; the other, farther west, is an irregular tract 50 by 70 miles in its largest dimensions. It is now definitely believed that the pest was imported with European broom corn brought to a large factory in St. Thomas about 1909 or 1910. It is only recently that it has spread to sufficient extent to attract general alarm. It is expected that the matter will be taken before the Dominion Parliament this winter. The department and New York State representatives also held a conference in Buffalo, November 19, where a program regarding the conduct of the corn-borer quarantine of certain towns in western New York was agreed upon. This program will be announced locally, and will assist farmers of the infested regions to plan their 1921 crop so as to avoid loss.

COUNTY AGENT'S PROMPT WORK PREVENTS MOTOR-OIL FAMINE

Alertness on the part of the county agent in Umatilla County, Oreg., this year prevented a motor-oil famine, which threatened many thousands of dollars in loss of crops.

Late in the spring it was found that due to an embargo there was little motor fuel on hand for tractors and trucks and that plowing could not be completed. Farmers used distillate, a lower grade of gasoline, for tractors and for operating the combined headers and thrashers with which the grain crops are harvested. Distillate was found to be entirely out of the market. The county agent appealed to several California oil-refining companies, and, with the aid of the California State Marketing Bureau, succeeded in having about 25 carloads of distillate shipped into the region.

The orders of farmers were pooled and banks were instructed to honor demands on account of those in the pool. The first shipment of 12 carloads, or 100,661 gallons, was distributed among 111 farmers in May and saved them $9,060. During June two more cars and July eight more cars were distributed, making a total of 285,851 gallons of fuel. It is estimated that the entire savings totaled at least $15,000. During the month of June similar service was given farmers by county agents in Morrow, Sherman, and Wasco Counties. In these three counties a total of 195,000 gallons of distillate were secured and distributed at a great saving.

SPINNING TESTS GIVE VISIBLE WASTE IN COTTON VARIETIES

Meade cotton when run through a series of spinning tests by the Bureau of Markets, United States Department of Agriculture, gave 3.5 per cent more visible waste than did the Sea-Island cotton under the same conditions. Textile specialists believe that the waste can be lowered to equal that of Sea Island by making certain minor adjustments on individual machines and that no injury to the yarn will result from such changes. A mill that is equipped to run Sea-Island cotton of a certain staple can be changed to run the Meade variety of the same staple with very little resetting of the machinery.

When tested for breaking strength in the coarser number of yarns, Sea-Island cotton broke somewhat stronger than the Meade yarn, but this difference is believed to be due to adverse growing conditions under which the latter variety was produced. When spun into finer yarns the Meade thread gave an equal breaking strength with Sea Island.

Meade cotton is a long staple upland variety of cotton developed by the Bureau of Plant Industry, United States Department of Agriculture, to offset the crop loss caused by the boll weevil, which threatens to destroy the Sea-Island-cotton industry.

You are your best asset. Capitalize yourself. Buy War Savings Stamps.

THE FARM HOUSE DETACHED FROM FARMING

By C. J. Galpin, Economist in Charge of Rural Life Studies, United States Department of Agriculture.

The pioneering stage in human housing is prolonged beyond the pioneering stage in animal and crop housing. The modern farm house follows at some distance the modern dairy barn. The American farmer, if present evidences are not misleading, is just emerging from the pioneer stage of his family housing problem and stands ready to apply his own well-known housing principles to the human animals and the humanized products of the farm. At this point the farmer is saying to himself, or perhaps the farm wife is saying to herself: "Now what values belonging to the family do we wish to foster and protect in a housing plan?" When the American farm man and woman have given their answer in full to this question, I am quite sure they will conclude that for the sake of the human spirit in the farm home the farmhouse must be detached from the constant invasion of the work side of farming. To humanize the farmhouse and its setting, almost the first step will be this detaching or "de-occupationalizing" process.

Barriers to Harmony.

A survey of the attempts of many modern farmers to create a humanizing atmosphere around the farm house shows that this effect is accomplished by psychological barriers, screens, and inclosures. The work appliances of the farm are necessarily in such close proximity to the house that exclusion is done by suggestion, rather than by actual shutting out of every scintilla of farm work. The low wall, the hedge, the clump of trees, running vines, are mental screens. We can peer over or around, but we do not. Roofs and outlines of farm buildings are visible but lost to sense in the competing humanism this side the barriers.

Produces Serious Difficulties.

The scattered situation of the various farm buildings and yards about the ordinary farm house, often at every angle, produces the serious difficulties of the detaching process. George Washington, the farmer, disposed his barns, outbuildings, yards, and gardens, at the wings of his Mount Vernon house. The rear was left open and free for stretching lawn, sky above, tall tree foliage at sides, sky at end of vista, meadow land dropping out of sight. The front was "laid down handsomely in grass," as George Washington described the lawn; while the Potomac River, a real moving picture, ran among the oaks on the river bank.

The country life problem as a whole can not make consistent headway in humanizing and socializing farm life, so long as the work elements of farming smother the farm home. That farm people get accustomed to the proximity of ever-present occupational things and processes, means only that hardening invades the precincts of the farm mind and soul as it invades the farm house. A rural housing social conscience will probably at no distant day transfigure living on the farm and give rural America an air of architectural grace and land-art beauty.

TESTS 29,638 SEED SAMPLES.

During the year ending June 30, 1920, the United States Department of Agriculture tested 29,638 samples of seeds for farmers preliminary to planting. Of these, 16,442 were tested in Washington and 13,196 at the five branches. Under the seed importation act 69,000,000 pounds of seed were permitted entry during the fiscal year, which was more than the total for the previous three years. Nearly 5,000,000 pounds were held at port, more than half of which was reclaimed and the balance ordered destroyed or exported. Red clover and alfalfa, crimson clover, rape seed, and alsike were among the leading seeds imported.

WILL CONSTRUCT MANY MILES OF TRAILS WITH FEDERAL AID

Between 9,000 and 10,000 miles of the marked trails which now crisscross the country from east to west and north to south are to be constructed by Federal aid. This amount is composed of 855 projects, which form links in one or the other of the 24 marked trails which have been laid out by private associations.

Every automobilist is familiar with the Dixie Highway, the Mohawk Trail, the Roosevelt Highway, and a score of other marked trails, which are so well built and maintained that driving on them is a joy and comfort. To assist in building these highways a Federal fund of $64,533,019 has been approved by the Bureau of Public Roads of the United States Department of Agriculture up to September 30, 1920.

These trails do not constitute an entirely satisfactory system of transcontinental roads, as officials of the department say their selection in many cases has been influenced too much by such factors as preexisting conditions, promises of improvement by local communities, pressure of selfish influence, and a desire to touch points of scenic and historical interest.

The extent to which Federal aid has been applied to the trails varies in the different States. Naturally the Western States are using much more of their Federal apportionments in developing roads of this character than the Eastern States. This is due to the fact that the trails in the Eastern States had already been improved to a large extent before the roads were selected by the pathfinders. This was not true in the West, where long stretches of the selected roads were still in an unimproved condition when they were designated.

Nevada leads in its use of Federal funds on roads of this character. Eighty-three per cent of its entire mileage of approved Federal-aid roads lies on one or the other of the trails which cross the States. On these roads Nevada will spend 90 per cent of the Federal money which has been granted to her.

RIDDING RANGES OF RODENTS AND PREDATORY ANIMALS

The losses caused by predatory animals, prairie dogs, ground squirrels, and other similar rodent pests on the western ranges is estimated to be more than $300,000,000 annually, says the Secretary of Agriculture in his annual report to the President, now made public. These animals and pests, according to the report, destroy live stock, crops, and range grass, and so seriously do they handicap the western farmer that the United States Department of Agriculture, in cooperation with the various States, has conducted a systematic campaign to destroy them and curtail the losses for which they are responsible.

"The hunters in the service of the department," says the Secretary, "killed more than 25,000 predatory animals last year, and perhaps an equal number were destroyed by a poisoning campaign, resulting in a saving to the live-stock interests estimated at $6,000,000." It may be added that since the work was begun, in 1915, the skins of the animals destroyed have been sold and the net proceeds, aggregating more than $240,000, turned into the Treasury.

New Plants Enrich Nation's Agriculture—Great Possibilities in Search for Crops

Some of the results in the search for and introduction, acclimatization, and adaptation of new crop plants into the United States by the Department of Agriculture are spectacular, indeed, almost romantic, says the Secretary of Agriculture in his annual report to the President, now made public. To illustrate what the introduction of some of these plants has meant to the agricultural wealth of the Nation the Secretary says:

"Durum wheat, introduced in 1899 from Russia, now produces a crop worth $50,000,000 annually. Egyptian cotton, brought by the scientists of the department in 1901, has become the basis of the long-staple cotton industry in the Southwest, valued at $6,000,000 in 1917, $11,000,000 in 1918, and $20,000,000 in 1919."

Alfalfa, a native of central Asia, brought into the Western States in about 1854, has become in a generation almost the basic crop of the West, according to the report. The sorghums are the basis of the great agricultural development of the semiarid Southwest. Japanese rices, secured in 1899, were the foundations of the great rice industry of Louisiana and Texas. The Washington Navel orange, introduced from Brazil in 1872, makes up the bulk of the California orange industry, producing a crop valued at approximately $16,000,000 a year. Continuing, the Secretary said:

"The culture of dates in California and Arizona is already a thriving business, which is expanding rapidly, and will in the near future have impressive value. Sudan grass, introduced in 1909 from Egypt, is now worth over $10,000,000 annually. Feterita, secured in 1906 from Egypt, produced in 1918 a crop valued at $16,000,000. Over 1,000 varieties of soy beans have been introduced from China and other parts of the Orient. From these the experts of the department have, after careful tests, selected eight of the best varieties, which are now largely cultivated and are an important element in the very rapid increase in soy-bean production. Peruvian alfalfa, introduced in 1899, is by far the most productive and valuable variety for the Southwest.

The Search for Grasses.

"Scientists are convinced that there are still great possibilities in the search for new crops, especially for plants that are cultivated little, if at all, in their native countries. Perhaps this is most strikingly exhibited in grasses, many of which have been introduced accidentally. Thus blue grass, white clover, redtop, timothy, and many others which came originally from Europe make up nearly all the grass lands of the North, and Bermuda grass from India, carpet grass from the West Indies, Dallis grass from Argentina, and lespedeza from Asia have performed a similar rôle in the South. California's pastures consist mainly of species from the Mediterranean region, such as alfilaria, bur clover, wild oats, wild barley, and numerous others. There are undoubtedly in central Asia many species which, if properly selected and introduced, will add greatly to the carrying capacity of the western ranges, aside from what can be accomplished by rational range management. From this region came alfalfa and sweet clover, both important in the West. There is every reason to believe also that good grasses and legumes can be found for the cutover lands of the South, and thus prepare the way for the further development of the live-stock industry in that section. It is impossible to bring in new grasses or other valuable crop plants from remote and almost inaccessible parts of the world without sending properly trained explorers, and larger funds for this work are needed."

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Great Undeveloped Market, Says Report Describing Possibilities There.

China has within her boundaries one-quarter of the total population of the world, and the mass of her people are fruit lovers. A certain amount of American fruit, both fresh and dried, has already found its way into the Chinese fruit stores, but the opportunities for expansion are immense. Hitherto the high-priced imported fruits have been consumed by the wealthy class, but the Bureau of Markets, United States Department of Agriculture, points to the significant fact that the wage-earning ability of the Chinese is gradually increasing. Market specialists conclude that it will not be long before the mass of the Chinese people will be ready to buy foreign fruits.

Japan Sharpest Rival.

Japan is the sharpest competitor in the Chinese fruit market, but should offer small resistance to a well-planned campaign by American fruit growers. The Japanese apples are far inferior to the American product, and do not command the same prices. The Bureau of Markets recommends that the fruit dealer who seeks business in China use the trade channels already established. The Chinese are extremely conservative, and do not welcome new systems to replace the ones they have in use.

One present drawback to foreign business with perishable products is due to the fact that the cold-storage facilities at the principal Chinese ports are inadequate. The Chinese have understood the principles of cold storage and have practiced its methods for centuries, but it has been only in recent years that her foreign business has been of a nature to demand large warehouses equipped to hold merchandise from other countries. It will be profitable for the American end of the industry to encourage the building of such warehouses where fruit can be held subject to the demand of the merchants.

The rate of duty on fruits is not sufficiently high to interfere with the development of the trade. For fresh and dried fruits the rate is 5 per cent ad valorem, plus 5 per cent of the duty as a port charge. A box of apples valued at $2 would pay a customs charge of 10½ cents.

Additional facts of value concerning the opportunities presented to the American fruit grower by this great undeveloped market can be found in Circular 146, United States Department of Agriculture. The circular gives an intimate and extensive report on the condition, customs, and possibilities of China as a market for American fruit products.

AIDING THE FARM WOMEN.

Very much more needs to be done before the mass of farm women will have even the modern advantages enjoyed by a limited number, the Secretary of Agriculture points out in his annual report to the President.

The States Relations Service has published the results of a survey through home demonstration agents of 10,000 farm homes in Northern and Western States.

Wherever it has been in operation the system of county home demonstration agents has proved to be the most helpful agency for the benefit of farm women, and it should be expanded, the Secretary asserts. He also urges increased appropriations for the research work of the Office of Home Economics of the department. The success of our newly established system of vocational education in home economics, provided for by the Smith-Hughes Act of 1917, as well as of home demonstration work, depends, he said, in no small measure upon the maintenance of adequate agencies for home economics research.

Cautions Against Eating Uncooked Pork—Frequently Cause of Painful Disease

The approach of the Christmas season prompts the United States Department of Agriculture to issue a warning against eating pork or any product containing pork unless it is well cooked. At that season, especially, quantities of certain kinds of pork products which many persons are accustomed to eat uncooked are prepared in homes and on farms, as well as commercially. Uncooked pork frequently contains parasites of microscopic size known as trichinæ, and persons who eat uncooked pork run the risk of contracting trichinosis, a most painful and distressing disease which sometimes ends fatally in spite of any treatment. The health of patients who recover from the acute stages of the disease is often permanently impaired.

What U. S. Inspected Pork Means.

It is important to remember that uncooked pork is likely to contain live trichinæ no matter how healthy the animal from which it came may have appeared, or how excellent the meat looks. A satisfactory method of meat inspection to discover these parasites has not yet been devised. Hence, with certain exceptions, it is dangerous to eat uncooked pork even though it has been "U. S. Inspected and Passed."

In order to safeguard consumers who may be ignorant or careless of the dangers of raw pork, the Department of Agriculture requires that certain kinds of ham, sausage, and other pork products prepared in establishments operating under Federal meat inspection be subjected to processes that are known to destroy trichinæ. Such processes, however, are required only in the case of those products that are customarily eaten without cooking. In the case of other products such as fresh pork and ordinary varieties of ham, sausage, and bacon, which in the United States are customarily cooked by the consumer before they are eaten, special processes to destroy trichinæ are not used in meat-packing establishments under Federal inspection. Accordingly, unless the product is definitely known to have been specially processed to destroy trichinæ, it is highly important that the consumer make sure that pork is properly cooked before it is eaten. The most effective and simplest precaution against trichinosis is to avoid eating uncooked or improperly cooked pork.

The trichina parasites die and become harmless when exposed to sufficient heat. They are so small that even though present in large numbers they do not appreciably affect the value or desirability of the meat for food purposes, provided it is not eaten raw or imperfectly cooked.

In the case of uncured pork the thoroughness of the cooking can be judged by whether the meat clear to the center of the piece has lost its reddish, bloody appearance and has become more or less white in color. Heat penetrates slowly into pieces of meat during cooking, and the temperature near the center ordinarily never approaches very closely that of the surrounding air or water.

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Examples: How long should a 10-pound ham be boiled if placed in boiling water? Ten multiplied by 18 equals 180 minutes, or 3 hours. How long should a 10-pound ham be boiled if placed in cold water and if 1 hour is required to bring the water to a boil? Ten multiplied by 18 minus 30 equals 150 minutes, or 2½ hours, after boiling begins.

In applying the rule given above, the 18 minutes per pound allowance should be followed in summer as well as in winter if the meat is taken from a refrigerator and cooking begun before it has had time to reach the ordinary house temperature. For high altitudes, where the temperature of boiling water is considerably less than at sea level, the time of cooking must be lengthened.

FARM INVENTORY INDEX TO FINANCIAL PROGRESS

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These are important questions to the farmer and questions that are not so easily answered as would at first appear. Farming is an intricate business and one in which returns from investment are sometimes long delayed, so that progress can not be accurately measured by the amount of money taken in in a given time. Sometimes cash income may be almost wholly attributable to reduction in other assets, so that in reality the result is like taking money from one pocket and putting it in another.

The farm inventory, or property list, offers the only practicable way of answering these questions. Once the farmer has made a complete list of all his assets and liabilities and has balanced them he knows just what his net worth is, and when he has made such a list annually he knows each year whether he has gone forward or back and just how much has been the increase or decrease in the net worth of his business.

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With another season of farm work fast drawing to a close, the United States Department of Agriculture is urging that an annual property list or inventory be made by every farmer. It is the only means, department specialists say, whereby farmers may know accurately their net financial worth, what progress they are making from year to year, and how their investment in farm property is being distributed. Property lists, or inventories, made in accordance with a plan outlined in the Office of Farm Management, United States Department of Agriculture, are not difficult to make and are of great value to any farmer who is striving to better his condition, overcome obstacles to success, and place his business affairs on a secure foundation. To drift along year after year, not knowing whether toward success or failure, is not the practice of business men. Specialists of the department are prepared to give complete directions for making a farm inventory that will put the farm on a business basis.

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Cost Figures on Fattening Beef Cattle—New Report Bears Out Previous Surveys

Figures on the cost of fattening beef cattle in sections of Missouri, Indiana, and Iowa during the past two years, made available by the United States Department of Agriculture, bear out the figures already issued on results of feeding in Illinois and Nebraska. On the average, cattle growers in the areas covered by the reports now issued failed to make as much on their cattle as they might have made had they sold their corn instead of feeding it.

In Missouri, where the investigations were carried on in cooperation with the University of Missouri, most of the cattle covered in the surveys arrived at market having cost the farmer between $11 and $16 per hundred, with average costs as follows:

Average Costs.

Winter 1918–19, all cattle (3,475 head), $13.78; winter 1919–20, cattle covered by survey records (3,415 head), $13.90, by cost-accounting records (2,076 head), $13.83.

In the Missouri area, figuring on the basis of the average steer, and counting corn at the farm price current when it was fed, there was a presumptive average loss of $4.54 per head for cattle covered in the first winter of the study, and of $20.95 and $23.70 per head, respectively, for the two groups covered during the second winter.

In Iowa, where the studies were conducted by Iowa State College, with the United States Department of Agriculture cooperating, most of the cattle studied in the winter of 1918–19 cost between $13 and $18 per hundred, laid down at market, while most of those covered in 1919–20 cost between $11 and $16 per hundred. Averages were as follows:

Winter 1918–19, all cattle (3,996 head), $15.32; winter 1919–20, covered by survey (3,165 head), $13.52, by cost-accounting method (1,129 head), $14.41.

Figuring on the basis of the average steer, and counting corn at its farm price, there was a presumptive average loss of $9.43 per head for the cattle covered during the first winter of the study, and of $10.03 and $9.33, respectively, for the two groups covered during the second winter.

In the Indiana area, where the study was conducted by Purdue University, with the cooperation of the United States Department of Agriculture, most of the cattle studied cost the farmers between $12 and $17 per hundred laid down at market. Costs were practically the same for 1918–19 and for 1919–20. Averages were as follows:

First winter, all cattle (1,540), $14.44 per hundred; second winter, cattle covered by survey (2,199 head), $14.57, by cost-accounting method (817 head), $14.79.

In the Indiana area, figuring on the basis of the average steer, with corn counted at the farm price, there was a presumptive average loss of $4.53 per head for the cattle covered in 1918–19, and of $19.33 and $27.11, respectively, for the two groups covered during the second winter.

Figuring without reference to the market price of corn, that is, counting actual amount received for corn fed, it was found that more that half the farmers concerned realized less than $1 per bushel by marketing their corn through cattle, and that a considerable percentage of the cattle did not return anything for the corn fed to them.

TELLS ABOUT COOPERATION OF AGRICULTURAL FORCES

(Continued from page 1.)

"Now, this is simply the best way of teaching. Farmers, like other people, grow and become self-reliant and confident exactly in proportion as they do things for themselves.

"So, if the farmers of any community want to borrow $50,000 or any other sum, the agents of the farm bureau may properly advise with them as to how to form a Federal farm loan association and how to get in touch with the governmental or other agency in order to secure a long-time loan, and also help them in developing plans for spending such funds in ways that will help the individuals and the community, but the farmers themselves must do the work through their own officers and must themselves handle all funds. If the Grange wants assistance in vitalizing its agricultural program in the county, the farm bureau lends its assistance through its cooperatively employed agents and otherwise in working out with them plans to that end.

A Local Chamber of Agriculture.

"Another way of viewing the farm bureau, is that it is essentially a local chamber of agriculture, functioning much the same as local chambers of commerce do, but very much more closely affiliated with government than chambers of commerce are. The local chamber of commerce works in the interest of the whole town, and so does the local farm bureau work in the interests of all the people of the whole county, including the Grange, the Union, the Dairymen's League, the Horticultural Society, or any other organized agricultural group within the county. The local farm bureau does not interfere with the development of any of these organizations, but rather, through its teaching staff and its direct connections with the State experiment stations and the National Department of Agriculture, is in position to bring any of the local organizations the latest advice or assistance on agriculture or rural matters.

"In the old day if the Farmers' Union or the Grange wanted assistance from the college of agriculture or the Federal Government, they had to send to these departments direct for such assistance. Now the Federal Government and the colleges have placed in each county farm-bureau trained men on whom any farmers organization may call and get immediate assistance, and not wait the longer process of dealing with the far-away State or Federal Government.

State and National Federations.

"The State federation of farm bureaus and the national federation are not creations of the Government; they are not publicly supported; and they are therefore not public institutions. They are nevertheless very important institutions, and are playing a most helpful rôle in promoting agriculture in fundamental ways of legislation, publicity, and as students of broad economic policies, and they are directly aiding the Government and the colleges in promoting county farm bureaus.

"The Federal Government took no part in creating these institutions because it had no fundamental reason or excuse for so doing. In creating the county farm bureau the Federal Government was concerned because it felt the need of a channel through which its information might flow with certainty to all the people in every community. The Federal Government deals with these local organizations through the State extension director and his staff. From the standpoint, therefore, of national demands, the local group was already federated, and we were enabled to reach the most remote community anywhere through the administrative extension officials at the agricultural colleges dealing with those local groups. The extension directors of all these States are likewise organized. They meet once or twice every year, and they have officers and committees with which the Federal Government can deal

on any extension matters of either sectional or Nation-wide scope. The Federal Government, therefore, had no right to use its public funds for creating an organization to influence legislation or matters of national policy. The people themselves are the ones to determine what Government shall do. Government does not tell the people what to do except in carrying out the laws enacted by the majority.

"There is every reason for the closest kind of cooperation by the extension forces of the States and Federal Department of Agriculture with the State and national farm bureau federations. The very valuable work the national federation has already done in analyzing proposed national legislation affecting agriculture; the appointment of rural economics and marketing committees of the ablest minds in the country; the aid given stockmen in their marketing problems at the big terminal centers; and like matters, all taken up within the first year of its organization, indicate something of the need and scope of work of this national organization, which may properly handle for the farmers matters that would be improper for the Federal department or State colleges of agriculture to undertake as public departments of Government. And above all they are lending the weight of their influence and directly aiding the Federal Government and the State colleges of agriculture in promoting county farm bureaus as extension institutions in every county of the United States. That is why we believe in them and want to see them grow."

MARKETING COST DATA NEEDED.

Need for reliable data on the cost of marketing farm products to supplement similar information concerning the cost of production was pointed out by the Secretary of Agriculture in his annual report to the President. This want, he said, has been felt for some time.

"In fact," he continues, "such data are essential to the correct understanding of our marketing processes and are fundamental to the development of plans for their improvement and the elimination of lost motion and unnecessary expenses. We should be able to indicate with a fair degree of accuracy the proportion of the consumer's price received by the producer and the proportion received by various marketing agencies. Studies with reference to the cost of marketing live stock, grain, milk, and potatoes are now under way, and it is highly desirable that they be extended as rapidly as possible to include other staple agricultural commodities."

What Part of the Farmer's Milk Check Represents Profits, Revealed by Tests

For 180 cows that averaged less than 5,000 pounds of milk annually, the part of the milk check that represented profit and reimbursement for the owner's managerial ability was 23 per cent. For 257 cows averaging more than 6,000 pounds annually, the per cent remaining for profit and the owner's skill was 41 per cent.

Has Been Making Studies.

For the last five years the Dairy Division, United States Department of Agriculture, has been making studies which bear on this problem in many dairy sections of the country; and two-year investigations on the requirements for producing milk have now been completed on groups of dairy farms in six of these communities. One of the latest of these studies, carried on in Vermont, is the one on which the above figures are based. What it has disclosed in regard to economy of production and the requirements for producing milk, may be of value to the dairyman who is interested in finding out where milk returns are going.

These figures, which were obtained from a study of the production records of 587 cows which remained in the herds a full year, show that the average annual production of the 180 lower-producing cows was 4,146 pounds; also that the average production of 257 higher producers was 7,144 pounds a year. After substracting from 4,146 pounds the amounts of milk required to pay production costs (feed, 1,810 pounds of milk; labor, 806 pounds of milk; and other costs, 570 pounds of milk) only 960 pounds of milk remained for profit and skill of the owner. For the high-producing group, however, 3,074 pounds of milk remained after the following deductions had been made; for feed 2,302 pounds of milk, labor 806 pounds of milk, and other costs 962 pounds of milk.

Here, then, were cows in the same locality, in some cases standing side by side, and all requiring about the same labor, yet some were producing three times as much profit as others, even though they were charged with greater quantities of feed and a large amount of "other costs."

The figures adduced are significant also in that they show that in milk checks size is not always a true measure of real value, but that the per cent of profit, as determined by the cows that are kept, plays an important part.

Requirements for 100 Pounds.

The figures upon which this comparison is based were actual records of production; feed, labor, and other costs were obtained by monthly full-day visits on each of the farms for a period of two years. Careful records were made on these visits of the daily milk production of each cow, feed consumed, labor required, overhead costs, etc. Using these data, the requirements for producing 100 pounds of milk were worked out. So far as possible, the requirements were determined in terms of pounds of feed, hours of labor, etc., so that constantly fluctuating prices would have no effect on the value of the figures. Results may be interpreted at any time by using prevailing prices.

The requirements for producing 100 pounds of milk, based on 847 cows, with an average annual production of 5,252 pounds of 3.9 per cent milk, were as follows:

	Winter.	Summer.
Grain.....pounds..	33.1	8.7
Hay and other dry roughage...do....	129.9	18.7
Silage and other succulent roughage.....pounds..	191.3	27.8
Hauling and grinding concentrates...	$0.020	$0.005
Bedding.....pounds..	11.2	.....
Pasture.....acres.	.....	.10
Human labor.....hours..	2.7	2.0
Horse labor.....do....	.5	.4
Overhead and other costs.....	$0.555	$0.425
Credit for calves.....	[1] .025	[1] .009
Credit for manure.....pounds..	382	50

[1] Of 1 calf.

"SWEET-POTATO SPECIAL."

With a view to cutting down the waste between the grower and the consumer of sweet potatoes, an exhibition car known as "The Sweet-Potato Special," was sent through 19 counties of South Carolina during September and October by the United States Department of Agriculture extension service, and Clemson Agricultural College, with the cooperation of several railroad companies. The car carried demonstration material on the proper harvesting, storage, preparation, and marketing of sweet potatoes, together with a model of a practical sweet-potato storage house.

Farmers in South Carolina, in common with 10 other Southern States, market only a small proportion of their crop. The department, through the cooperative extension service, aims to cut down this waste through promulgating better methods.

Children Learn Food Value of Milk—Campaign in Seattle Schools Helpful

As a result of the drink-more-milk campaign conducted in Seattle (Wash.) schools last spring, the improved physical condition of the children and the large consumption of milk reported by them—the average per capita being 0.7 of a pint daily—specialists of the Dairy Division of the United States Department of Agriculture were much impressed with the success of the work, which was carried on cooperatively with the Washington State College.

Of the 27,911 children addressed, it was found that 19,000, or 70 per cent, were drinking milk daily, and that only 31 per cent of the entire number were drinking tea or coffee, thus indicating the effectiveness of the milk campaign which had previously been carried on in the schools. In all the campaigns, the school work has proved one of the most effective means of spreading the knowledge of the food value and health-giving qualities of milk; and the work in the Seattle schools was no exception.

Body Compared to a House.

When talking to the little people in the schools, the body was always compared to a house, and it was a great game for the youngsters to learn how to build strong body houses. They were told about the little white "teeth people" who live in the hallway (the mouth) of their house. One little girl sidled up to the speaker and with a decided lisp said, "Lady, there are two sempty seats in my hallway." Sure enough, two of her front teeth were gone.

The horror of growing fat appeared to start young with the girls, for in one first-grade class a little girl said she did not want to drink milk and get so fat she could not dance.

In impressing upon the children the value of milk for bone building, the class was asked what they would be like if they had no bones. One small boy exclaimed, "Gee, we'd be a lump, and then we'd have to stay in bed all day; I'd like that."

Athletics Emphasized with Older Children.

When talking to the older boys and girls, athletics were stressed, and they were told of the value of milk in training for an athletic event. One speaker told about a champion wrestler who when talking to young people always referred to tea and coffee as bad, and said that the only drinks which he himself used were milk and water. Famous baseball players who drink a quart of milk a day were also mentioned; and this, along with the fact that the midshipmen at the United States Naval Academy drink a quart a day, did much toward convincing the boys that milk is not a baby food alone.

MORE BUILDINGS NEEDED FOR HOUSING DEPARTMENT

The Secretary of Agriculture in his annual report to the President urged the need of providing additional buildings for housing the department in Washington.

"Immediate consideration should be given," he said, "to improving the housing conditions of the department in Washington. The existing situation makes for waste and inefficiency in many directions. Forty-two buildings or parts of buildings, including both Government owned and rented structures, are now occupied for office, laboratory, storage, and other purposes. They are in widely scattered locations, many of them considerable distances away from the administration building, and several are antiquated, unsuitable, and nonfireproof. The cost of maintenance, upkeep, and operation under such conditions is unavoidably large and will grow year by year.

"Recently some branches of the department, at the direction of the Public Buildings Commission, which has full control over the allotment of all space occupied by the Government departments in Washington, have been placed in the temporary frame structures erected during the war. It is difficult to conceive of any type of buildings more inflammable than these. The property and records of the Government in them are exposed to serious fire hazard at all times, to say nothing of possible loss of life in the event of fire. For what length of time it will be necessary to occupy these buildings has not been indicated, but to continue to use them indefinitely is, in my opinion, contrary to the best interests of the department.

"No other department of the Government in Washington is as inadequately and unsatisfactorily housed as is the Department of Agriculture, and immediate attention should be given to the development and execution of a building program for it. The first step should be the construction of the long-deferred central building between laboratories A and B along the lines of the original designs, which are still in the files of the department, the acquisition of the land and buildings in one of the squares lying immediately south of the department's reservation, and the erection thereon of a modern fireproof structure of plain, though pleasing, appearance. This would make it possible to bring the scattered units of the department closer together, to relinquish many buildings which are remotely located, unsuitable for offices and nonfireproof, and to effect a large annual saving in rentals."

YOUNG GIRL "PUTS ACROSS" SUCCESSFUL COMMUNITY FAIR

In spite of adverse local sentiment a 15-year-old girl succeeded in "putting across" a successful community fair in Mill Point, Sullivan County, Tenn., early this fall. This particular community had never had any kind of fair, in fact there had never been one in the whole region round about. The county agricultural agent and the home demonstration agent made a trip to Mill Point late in the summer, and while there visited the school and outlined plans for a fair such as they would like to see held sometime during the fall. Many of the people who lived in the neighborhood thought it an impossible undertaking. In fact, the extension workers were told at first that the fair could not be held in the school building. Later permission was granted, however, but the prospects for a fair of much or any value looked dubious.

At this point in the undertaking, Anabel Harr, president of the Four-H Canning Club, a girl about 15 years of age, took charge of the publicity work. Miss Harr advertised the event on every occasion, and made personal visits to the homes, urging the people to attend the fair and bring their exhibits. As a result of her work there was a good attendance, and some excellent exhibits of farm, garden, orchard, and home products.

The people who came to the fair were much interested in the enterprise, and decided before the day was over that it must be made an annual event. The young people, including members of boys' agricultural clubs and girls' home demonstration clubs throughout Tennessee, are taking the lead in stimulating interest for better farming and better homes, as well as for a closer relation between the people of the community.

Corn Borer Upsets Sacred Indian Customs—Senecas Perturbed Over "White-Man Pest"

Once more the advance of the white man has come in conflict with the sacred institutions of the native rulers of our soil. There is indignation on the Cattaraugus Reservation of the Seneca Indians, lying about 30 miles southwest of Buffalo, N. Y. The European corn borer, a scourge imported from across the Great Waters where gunpowder, fire water, derby hats, and all the devastating influences originated, has come to infest their sacred maize. Corn is among the most revered products among Indians, and is concerned with a number of their annual ceremonies including the green-corn dance, and the annual exchange of ears of corn among the various families and reservations. One of the council houses is in quarantine and the other is not.

Blame the White Man.

The advent of the European corn borer brought a quarantine by the Federal Horticultural Board of the United States Department of Agriculture, which restricted the transfer of corn from one locality to another. The pest affected the tassel of the corn, which the Indian likes to see waving erect, and caused it to droop. Members of the tribe who cling to the early traditions blame the white man severely, and some even attribute their trouble to a training school on the reservation which has brought innovations to upset the traditions of the red man. Nevertheless, once the pest is with them; they are determined to do all in their power to eradicate it.

Through their leaders they have given full assurance that they will abide by the quarantine, and comply with all regulations and extermination measures. Seneca Indians of western New York maintain a peculiar government with council houses at Versailles and Red House. They claim their authority has been handed down from the original Six Nations, and that to a certain extent they are independent of either State or Federal control.

9,000 MILES THROUGH AFRICA IN SEARCH FOR NEW PLANTS

(*Continued from page 1.*)

sonable to suppose some important grain, forage, or fruit crops may be developed.

Importations That Made Good.

Ground for such belief is furnished by past records, notably the work of the late Frank N. Meyer, who sent thousands of plants from China, many of which even now rank among our most desirable products. The large Tamopan persimmon from China, now commonly met on the market, and the Chinese jujube, are among his trophies, while from Africa we have secured the long-staple Egyptian cotton and Sudan grass, Rhodes grass, and many of the more important Kafir corns and sorghums, crops which mean approximately fifty millions of dollars in crop values to the United States each year and the development of semiarid lands not adapted to previously grown agricultural crops.

In Cape Colony, Dr. Shantz went east to Port Elizabeth, where the famous Addo bush occurs. Many plants were secured, one of the most interesting being the Speckboom, which is one of the most important foods of the elephant. It covers whole hillsides with its succulent growth. Cattle and sheep are fond of it, and there is a chance of its becoming of value in southern California. Speckboom will grow under practically the same conditions as the utterly worthless chapparal of southwestern California.

He then passed northwest over the Karroo Desert, similar to ours in the Great Basin, but differing in the respect that most of the plants form excellent forage for sheep, cattle, and ostriches, and it seems probable that some of the more desirable of these desert plants may be utilized in our desert country to improve the range.

The route lay east and north through the Kimberley diamond region and the gold-mining country of Johannesberg and Pretoria, the Government headquarters of Union South Africa. There he visited the agricultural departments for a comparison of notes on the agriculture of the two continents and to arrange a mutual exchange of plants.

This section is the center of the great Transvaal agricultural area, and here corn, known as mealies, is the chief crop. One of the most important varieties is our own Boone County White, a gift from America of considerable value to the farmers of the Transvaal.

In the low veldt at Nelspruit are large orchards of subtropical trees and fruits, many varieties of which have not been grown in the United States. It is hoped that an arrangement will be made whereby they can be secured for test in this country. Among them are some particularly desirable mangoes, adaptable to Florida.

The route then lay to the seacoast at Lourenco Marques and by ocean steamer to Beira. Dr. Shantz arranged with the agriculturist there to get some desirable East African mangoes which the department has wanted for several years.

He then traveled over the highlands of Portuguese East Africa, which have been developed by the Mozambique company into one of the most important agricultural sections of East Africa.

He then proceeded across Southern Rhodesia to Bulowayo and Victoria Falls. At the latter point many of the fruits concerning which Livingstone wrote enthusiastically were found and tested and the seeds sent to the department in the hope that they might prove useful here.

Hears of Railway Wrecks.

Dr. Shantz spent 10 days there and a month at Kafue a little farther north in Northern Rhodesia, where a delay was caused by the sickness of two members of the party. At this point word was received of a railway wreck on the Congo Railway, in which two members of the original party were killed and two injured and forced to return to America. This news, coupled with the sickness in camp, was the darkest part of the trip and threatened at one time to terminate the expedition, so far as Central Africa was concerned.

Mr. Raven, of the Smithsonian Institution, and Dr. Shantz decided to keep on through the Congo. Here for the first time the party encountered a lack of adequate provision for traveling. From there on practically no hotels and no provision for food for travelers were found, although in some cases the captains on the ships on the Congo were kind enough to allow the travelers to mess with them, and at certain points grass huts had been provided as temporary quarters for travelers.

This section was particularly interesting to the agricultural explorer because of the immense number of wild sorghum grasses which were found all along the line, as well as interesting vegetable and food plants used by the natives as well as their rather unique methods of agriculture.

The two men proceeded down as far as Kindu, which is situated about midway between the Atlantic and the Indian Oceans and about three degrees south of the Equator.

From here they proceeded to Lake Tanganyika by way of Albertsville. This was interesting country because here was located Ujiji, where Stanley found Livingstone, and a few miles north, Kigoma, the terminus of the railway line leading from the Indian Ocean at Dar-es-Salam. Here were found the finest mangoes yet encountered, fruits of unusual size and flavor, as well as many interesting types of beans, castor-beans, cassava (tapioca), and many wild grasses which may prove to be of forage value in the southern parts of the United States.

A visit to the new Belgian territory of Irundi offered opportunity to study probably the finest grazing land in all Africa, a region which supports millions of natives, who rely almost entirely upon cattle which graze upon the natural grasses of this great upland country.

At Tabora, farther east, known as the home of the mango, wonderful trees and fruits were found. At Dar-es-Salam the cocoanut palm is one of the most important crops and has been planted on the sandy lands which extend for many miles back from the coast.

In Zanzibar, principally noted for the production of cloves and for the extensive groves of cocoanut palm and many tropical and subtropical plants, Dr. Shantz obtained and sent home seeds and plants of a number of important fruits, and also many of the staple grains and legumes grown in various parts of the East Coast of Africa and sold on the Zanzibar market.

Returning to the mainland at Tanga, Dr. Shantz proceeded across German East Africa to near Kilimanjaro, one of the most wonderful mountains in the world, at the base of which is a very rich agricultural country. Here are great plantations of sisal, rubber, and coffee, and many important forage grasses.

Sees Large Wild Herds.

From here the party passed through Voy and from Voy to Nairobi, the seat of the agricultural department for East Africa, and here much help was secured from the local authorities. An extensive trip was also made into the desert country north and east of Mount Kenia, and the principal varieties of tropical crops grown by the natives in this section were secured. Dr. Shantz also secured here a notable nut plant called telfaeria, which forms a large gourd 2 or 3 feet long containing a large number of seeds of a delicious nutty flavor, about 1 inch in diameter and one-quarter of an inch through, which taste something like our butternut. Although this plant has not yet been tried in this country, it seems probable that it can be grown here, at least in the Philippines and possibly in Hawaii and Porto Rico.

The trip west to Lake Victoria across Uganda and down to the Sudan was through a region comparatively little known by our department, but in which many of our crop plants are grown, and which undoubtedly can supply many native plants of importance in the future development of our agriculture.

The trip down the Nile from the very headwaters at Ripon Falls was most interesting because of the immense development of native grasses and grain sorghums which almost everywhere line the banks of the Nile. Seeds of these plants were secured at many different stations. The agriculture, methods of irrigation and cultivation, especially in the upper and lower Sudan, were of especial interest to an American agriculturist.

The African expedition ended at Port Sudan September 2, 1920. Dr. Shantz brought with him about 3,000 photographs in addition to the many plant specimens sent or brought back.

The living plant material is now growing in the various plant-introduction gardens of the department preparatory to being distributed later to experiment stations and special experimenters in different parts of the country.

Purebred or grade dairy cows frequently earn for their owners 25 to 100 per cent more than the returns received from scrubs.

Home-Growing Ice Under Difficulties—Impounding Water So It Will Freeze

To make natural ice, one essential is water, and the other is freezing weather. The trouble is that in many cases there is plenty of the right kind of weather, but little or none of the water, at least the kind of water that will be still long enough to be frozen. There are several ways of getting around this difficulty, according to "Harvesting and Storing Ice on the Farm," a Farmers' Bulletin issued by the United States Department of Agriculture.

Making an Ice Pond.

Suppose a farmer finds no suitable lake or pond in his neighborhood. He can create an artificial lake by diverting a stream into an excavation, or by building a dam across a low piece of ground. Some farmers have made artificial lakes in their front yards, and they have been pretty in summer as well as useful in winter. One thing that must not be forgotten is to keep these lakes pure and clean. How to do that is described in the bulletin.

But suppose a farmer has no place for a lake, although cold weather prevails in his part of the country for several weeks at a time. He can freeze his ice in metal cans or special paper bags.

"The cans may be made in any convenient size by a local tinsmith," says the bulletin, "and should be of galvanized iron, reinforced at top and bottom with iron strips.

"The bottom is made smaller than the top to make the removal of the ice easier. The cans are placed near the water supply, filled with water, and left exposed to the weather. A shell of ice soon freezes around the inner surface, and when the shell is from 1½ to 2 inches thick, hot water is poured over the outside of the can and the shell removed. A hole is broken through at the top of the shell and most of the water inside is then poured out. As the freezing progresses water is poured into the shell, a little at a time, until a solid block of ice is produced. By this method only a few cans are required, which keeps the cost low.

"About the same method is employed when special paper bags are used, although they do not last so long as the cans. The advantage of the bags over the metal cans is mainly in cheapness, for they are not so convenient to handle.

"Another method that can be used in very cold sections of the United States is to run water into the ice house and let a layer freeze. This is done by first constructing a dam of snow around the floor of the house 10 or 12 inches from the walls in order to allow sawdust insulation next to the walls. The interior of the house is then flooded with a few inches of water, which soon freezes, the procedure being repeated until the house is filled with ice. It is then covered with sawdust and closed up until ice is needed. A great disadvantage of this method is that in order to remove ice it must be cut or chopped out with an ax, which results in uneven and irregular pieces and considerable waste of ice."

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DEPARTMENT'S STATEMENT ON FERTILIZER SITUATION

Has Been Sent to Fertilizer Manufacturers in United States.

Discusses Previous Communication Sent Them in September Requesting Information Concerning Their Prices for Mixed Fertilizers for Spring Season of 1921.

The United States Department of Agriculture has sent the following statement on the fertilizer situation to fertilizer manufacturers:

"In executing its duties under the Lever Food Control Law and the President's proclamation regarding fertilizers, a letter was addressed, on September 25, to all fertilizer manufacturers under license requesting them to submit information regarding their prices for mixed fertilizers for the spring season of 1921. This was shortly after the prices of raw fertilizer materials had begun to decline. At that time the estimated average purchase price of ammonia was around $5 per unit of 20 pounds, which was a dollar a unit less than for the fall of 1920; acid phosphate $1 a unit, which was the same as for the fall; and potash $2.25 per unit, which was 50 cents a unit below the fall price. The prices of raw materials, together with manufacturing costs, allowances for shrinkage and for profits, form the basis upon which the fertilizer manufacturers establish selling prices.

"The prices quoted by the larger manufacturers for the spring of 1921, according to statements submitted by him, were based upon a unit cost of ammonia of $5.25, phosphoric acid 80 cents and potash $2.50. When these prices were received early in October, the following communication was sent to some of the principal manufacturers:

'With the break in general commodity prices there has been a recent break in the prices of many of the fertilizer materials. This price adjustment has not yet been accomplished. The indications are now that we are on a continually falling market with certain of the materials. * * * Therefore the Department is strongly of the opinion that prices fixed for the entire spring trade to July 1, 1921, on the basis of present values are not justified. Your prices for spring delivery should be lowered now to the fullest extent having in mind the reductions which recently have taken place in many of the fertilizer materials and also the probable future prices of these materials, and they should be still further lowered later if conditions in the fertilizer material market justify.

'In your letter you propose a price of $5.25 per unit for ammonia. The department feels that this is a very generous price for materials that you have already purchased. It believes that it is too high a price for the market today and too high a price for you to carry as a fixed price per unit for ammonia up to July 1, 1921. The department expects you to lower this price at the outset.

'The price you figure for potash—$2.50 per unit—is, it is believed, much above what is necessary for you to charge to secure your 15 per cent gross profit. The department will expect you to revise and lower this figure.'

"The department has repeatedly urged the fertilizer trade, in determining their prices for the spring season of 1921, to recognize to the fullest extent the downward trend of prices of raw materials and to give their customers, the farmers of the United States, every possible price concession. Their attention has been called to their insistence during the war years upon the application of the 'replacement principle' in determining their price quotations during the period of rising prices and to their abandonment of

(Continued on page 5.)

MANY FARMS CONTRIBUTE TO COST-PRODUCTION FIGURES.

In carrying forward the studies in the cost of producing farm crops, 846 records on the cost of growing cotton, 481 on the cost of producing wheat, and 175 on the cost of producing sugar beets were obtained last year by the United States Department of Agriculture. Investigations into the cost of fattening cattle are now in progress on several hundred farms in Indiana, Illinois, Iowa, Nebraska, and Missouri. Similar studies have been completed on the costs of feeding cattle on 126 farms.

FARMERS AGAIN JUSTIFY FAITH IN THEIR ABILITY TO PRODUCE

Produced Immense Harvest in Face of Enormous Difficulties.

Secretary of Agriculture, in His Annual Report, Tells President of Harvest That is Largest, With a Single Exception, in History of American Agriculture.

The farmers of America have again justified the faith of the Nation in their ability to meet its requirements of food, feed, and raw materials for clothing, says the Secretary of Agriculture in beginning his annual report to the President. They have produced this year in the face of enormous difficulties, he continues, the largest harvest in the history of American agriculture with a single exception.

Corn Crop Unprecedented.

The corn crop of 3,199,000,000 bushels is unprecedented, representing more than four-fifths of the world's production. The sweet potato crop of 106,000,000 bushels is the largest ever produced and far in excess of that of any other year except 1919. The rice crop of 52,000,000 bushels is one-fourth greater than the largest crop ever before harvested. The tobacco crop of 1,476,000,000 pounds considerably exceeds any previous yield. The sugar-beet crop is more than one-third larger than the largest ever before recorded. The grain sorghum crop of 149,000,000 bushels is 18 per cent above that of 1919, which was itself a record crop. The potato crop of 421,000,000 bushels has been exceeded only once, and then by a very narrow margin. The oat crop of 1,444,000,000 bushels has been exceeded only three times, and the tame hay crop of 88,000,000 tons only twice. The apple crop of 236,000,000 bushels has been exceeded only once, in 1914. The yields of wheat, barley, buckwheat, peaches, peanuts, edible dried beans, flaxseed, and cotton are slightly below the average, but they, nevertheless, represent an enormous volume in the aggregate. The number of all classes of live stock on farms, although less than the number in 1919, exceeds by

18,214,000 the average for the five years preceding the outbreak of the European war.

These remarkable results, the Secretary points out, were achieved under great difficulties. In only four years of the last 37 was the progress of plowing up to May 1 so backward as in 1920. Farmers were discouraged. They saw no hope of reduction in the prices of fertilizer, machinery, and supplies, which had steadily increased since 1914. The labor supply was approximately 37 per cent short and wages had risen to such a point in 1919 that the farmers were appalled at the thought of paying still higher wages in 1920. During the time when the farmers were cultivating their crops, paying for labor and supplies at unusually high rates, the prices of agricultural commodities generally remained high. In midsummer, when the farmers' period of outlay was nearly at an end and their income period was about to begin—after the problem of production had been solved—a sharp decline occurred in the prices of practically all farm products. Covering nearly everything the farmers had to sell, it did not materially affect the articles they had to buy. The year's output, produced at a normally high cost, was worth at current prices $3,000,000,000 less than the smaller crop of 1919, and $1,000,000,000 less than the still smaller crop of 1918. A note of warning is sounded that the stability of agriculture in the United States is threatened unless farmers receive an adequate return for their products.

Must Have Fair Return.

"The very foundation of our Nation—the stability of our agriculture—is threatened," declares the Secretary. "The farmer must have, under ordinary conditions, a reasonable prospect of a fair return for his labor and the use of his capital. The science, the art, and the business of agriculture can not thrive unless he is suitably and profitably paid for the products of his farm—unless he receives compensation sufficient to enable him to continue to produce and to maintain for himself and his family satisfactory standards of living."

The Secretary laid emphasis upon the importance and necessity for a sustained agriculture in this country. Everything possible, he said, must be done "to prevent or at least to lessen the effect of the recurrence of conditions under which large numbers of farmers conduct their operations at a loss. The matter is of such tremendous importance to our entire population that it should be recognized everywhere as a national problem and dealt with as such."

(*Continued on page 8.*)

ASKS AUTHORITY AND FUNDS FOR WORK OF REFORESTATION

Money Needed for Broader Program for Conserving Forest Resources.

Supplemental Estimate Submitted by Secretary of Agriculture Has Approval of President—Would Cooperate with State Officials in Forest Work.

Legislation and an appropriation of $1,000,000 to enable the Department of Agriculture, through the Forest Service, to cooperate with the States in forest-fire protection and other forestry work in the next fiscal year has been asked for by Secretary Meredith, in a supplemental estimate submitted to Congress through the Treasury Department, with the approval of the President. This amount is needed, Secretary Meredith feels, in order to enter on a broad program for conserving the forest resources of the United States.

For some years the Forest Service has had $125,000 annually for cooperation with States to protect the watersheds of navigable streams against forest fires. If the new recommendations are adopted, the work will aim at the protection of forest lands generally, with a view to insuring their reforestation.

What the Legislation Carries.

The legislation asked for would authorize and direct the Secretary of Agriculture, through the Forest Service, in cooperation with State officials or other suitable agencies, to recommend for each forest region of the United States the essential and standard requirements in protecting timbered and cut-over lands from fire, in reforesting denuded lands, and, where and to the extent necessary, in the cutting and removal of timber crops by methods promotive of continuous production. The Secretary of Agriculture would also be authorized to cooperate with the States for putting into actual effect such requirements, with a view to furnishing a continuous supply of timber for the use and necessities of the people of the United States. It is to defray the cost of this cooperation that the million-dollar appropriation is asked. Federal expenditures in any State would have to be matched by at least equal expenditures by the State, of its own or contributed private funds.

The request, officials of the Department of Agriculture say, is in line with the course advocated by large associations representing the lumber, paper, and allied industries. These industries have been forced to recognize the depleted condition of the country's forests by increasing shortage and cost of material, and are urging a national policy of forestry which will provide perpetual supplies of timber and other forest products.

"To provide an adequate future supply of timber," states Secretary Meredith in transmitting the request for legislation, "is one of our most urgent economic problems. One forest region in the United States after another has been cut out until three-fourths of our primeval forests are gone. We are cutting our remaining timber four times as fast as it is being replaced by growth. This situation is reflected in the cost of forest products to the consumer, in the shortage of dwellings, in the inadequate supply of newsprint paper, and in the scarcity of certain kinds and grades of lumber which is a serious menace to many American manufacturers.

Cost of Transporting Heavy.

"One of the clearest indications of the using up of our forests is the steadily rising cost of transporting lumber and pulp wood from the forest to the mill or consumer. This is imposing a heavier burden upon the consumer of forest products every year, particularly with the approaching exhaustion of the pine forests in the Southern States, which will leave the Nation largely dependent on the supply remaining in a single region—the Pacific Coast.

"Sixty-one per cent of the timber left in the United States is west of the Great Plains; and increasing quantities of ordinary construction lumber are being hauled the width of the continent, subject to difficulties of car shortage and freight congestion and at a cost for transportation alone exceeding the value of common grades of lumber at the sawmill. To exhaust our western forests and become dependent upon Siberia would simply carry one step further the transportation situation now rapidly coming about.

"This situation with its serious economic consequences is unnecessary. We have 81 million acres of forest land, more than all the forests of continental Europe, except Russia, combined, which is now idle as far as the production of economic timber crops is concerned. There is enough forest land in the United States not required for other purposes to provide an ample supply of wood for all our industries, farms, and homes, if this land is kept productive.

"The problem is national in its scope because it has to do with one of our most essential and widely used raw materials. The situation, however, can be met by a constructive plan of Federal cooperation with the States, including financial aid,

in determining upon and putting into effect under authority of the States such measures of fire protection and timber cutting as will perpetuate rather than destroy our forests.

Present Appropriation Inadequate.

"The present appropriation of the Forest Service for the cooperative fire protection of forested watersheds of navigable streams is wholly inadequate for this purpose, both in amount and in authority to determine the essential requirements and cooperate with the States in bringing about their enforcement. Cooperation should be extended to 35 States, which contain approximately 315,000,000 acres of State and privately owned forest land. Less than one-half of this land is now receiving any protection from forest fires. At a minimum average cost of 1½ cents per acre, the yearly charge of protecting the State and privately owned forest land of the country would be approximately $4,725,000.

"A Federal appropriation of $1,000,000 is the minimum that should be available as the Nation's share in this enterprise. The use of such a fund in cooperation with the States under the general division of costs, which has brought such splendid results in agricultural extension work and the construction of public highways, is the most direct and effective attack that can be made upon the great problem of timber depletion. It is an expenditure of Federal moneys amply justified, because in assuring supplies of timber which would otherwise be lacking it will be of direct benefit to every user of wood in the United States."

ANTI-HOG-CHOLERA POSTER TRANSLATED IN SPANISH

The United States Department of Agriculture's hog-cholera poster, "Why Suffer Hog Cholera Losses," has been translated into Spanish by the Argentine Embassy and is to be distributed among hog raisers in Argentina. This poster gives important facts about the disease, its symptoms, and explains the preventive serum treatment.

Representatives of the Argentine Government are following the work of the United States Department of Agriculture very closely, according to department specialists, and are introducing discoveries and methods worked out by this country to the farmers and stock raisers of their native land. The original edition of the poster, as issued by the department, is particularly adapted to the needs of swine growers in the United States, who may obtain copies by addressing the Division of Publications, United States Department of Agriculture, Washington, D. C.

Should Not Urge Land Settlement Unduly—Better to Safeguard Normal Movement

"It appears that under existing conditions, we should not attempt to stimulate unduly the normal rate of settlement, but rather to guide and protect the normal movement along lines which will insure a reasonable degree of success in the development of new lands with a minimum of wasted capital and human effort," says the Secretary of Agriculture in his annual report to the President.

"It yet remains to be determined," he states, "whether this purpose can best be accomplished by governmental action, by private enterprise with comprehensive attempts to educate both land-settlement agencies and prospective settlers in the methods most favorable to success, or by private agencies systematically regulated.

"While present conditions do not seem to justify a policy of encouraging and stimulating the extension of the farm area, it must be recognized that some new land is continually being brought into cultivation in certain regions. Moved by the spirit of adventure characteristic of Americans, by the desire to rise from the status of tenancy to the more independent status of farm ownership, by propaganda which portrays to city people in alluring fashion the attractiveness of country life, and particularly by the effective advertising and skillful salesmanship of various kinds of private land-settlement agencies, men may be expected to try their fortunes in the development of raw farm land, even in periods when conditions do not favor agricultural expansion and when the net migration to cities is above the normal. It is of the highest importance that these men be enabled to embark in such undertakings with the greatest possible assurance of success, for the failure of one is likely to result in the discouragement of many.

Was Due to Initiative.

"In an earlier period of our history the development of new agricultural areas was largely the result of the initiative of individuals. At present it is, to a considerable extent, under the guidance of private agencies engaged in promoting the settlement and sale of land for profit. Whether the methods employed by some of these enterprises are such that private profit is not incompatible with the rendering of important service in facilitating the wise selection of land, in providing suitable arrangements for credit, and in creating conditions favorable to the success of the settlers can be determined only by comprehensive investigation. During the past year the department has begun a study of the problem. On account of its magnitude, final conclusions may not be available for some time, but enough progress has been made to reveal the fact that numerous agencies, whose volume of business is very great, are preying on the impulse to acquire farm land, and that the results in misdirected investment of capital, futile labor through years of unavailing struggle against hopeless odds, are consequent discouragement and despair, are too serious to be ignored. The comfortable doctrine of leaving the buyer to take care of himself has been discarded in many phases of our national life. Surely in the settlement and development of land the buyer should at least have full and complete information for his guidance."

CONSIDERS PINK BOLLWORM QUARANTINE FOR NEW MEXICO

A public hearing to consider the advisability of extending the pink bollworm quarantine to the State of New Mexico was held here Dec. 17, by the Federal Horticultural Board, United States Department of Agriculture. Persons interested in the proposed quarantine appeared and were heard either in person of by attorney.

The necessity for quarantine action is the finding of the pink bollworm in Dona Ana County, N. Mex., in the vicinity of El Paso, Tex., and the need, therefore, of extending the regulations now in force against certain counties in Texas and Louisiana to the newly infested region. The adjoining county of El Paso, Tex., is now under quarantine. Restrictions of the quarantine apply to the movement and utilization of cotton and cotton products for preventing the spread of the insect. The movement of lint is safeguarded by being limited to certain routes and ports of export.

Efforts are under way to secure the cooperation of Mexico in providing for the cleaning of all Mexican cars at some point in the interior of that country, to avoid as much as possible the risk of bringing infested seed to Juarez, within a distance of easy flight of the mature insects to the cotton fields on the American as well as on the Mexican side of the river.

Weekly News Letter

Published every Wednesday by the
UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS

John L. Cobbs, Jr., Chief

PRESS SERVICE
Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

WILL REQUEST AUTHORIZATION TO CONSOLIDATE TWO BUREAUS

Authority to consolidate the Bureau of Crop Estimates and the Bureau of Markets will be asked of Congress in the Agricultural appropriation bill, the Secretary of Agriculture declared in his annual report to the President. In explaining the proposed change, he said:

"I have been influenced to take this course by a number of important considerations. The first is that each of the bureaus, in accomplishing the important work with which it is charged, needs the additional strength that could be brought to it by some portion of the machinery of the other. In the second place, the legal duties of the two overlap in some directions, and there is a natural and inevitable tendency for each bureau to duplicate a portion of the other's work.

"This tendency would be eliminated by the proposed consolidation, and confusion in the public mind as to division of work between the two bureaus would be avoided. Furthermore, crop and market reports could be published together, and farmers and business men would have all the facts in one document. The leased telegraph wires of the Bureau of Markets could be utilized for transmitting crop information to Washington and for its prompt dissemination. In some States, the branch offices of the two bureaus could be brought together in the same quarters, and frequently the same crop and live-stock specialists could serve both bureaus, not only in this country but abroad.

"The operating forces of the two organizations could be combined, as well as the duplicating and mailing services and the staffs dealing with the purchase, custody, distribution, and utilization of supplies. Specialists working along statistical and economic lines in both bureaus could be brought together in a statistical research division to handle statistics of production, consumption, imports and exports, surpluses and deficiences, and farm and market prices of agricultural products for all countries. In short, the proposed consolidation is in line with good administration and efficiency in the public service and should be put into effect without delay."

"MOVIE" SHOWS PLANT PEST SEEN THROUGH MICROSCOPE

A lively bathing scene in which the pool is a dewdrop and the bathers are creatures too small for the naked eye is shown in one of the recent motion-picture releases by the United States Department of Agriculture. The new film, known as "A Plant Disease and How it Spreads," was photographed under the supervision of scientists in the Bureau of Plant Industry. The pictures, most of which were taken through a microscope, deal with the organisms that cause rhubarb blight and result in heavy loss in truck-farming sections. Field scenes also are included. Symptoms showing the existence of the blight, the extent of damage wrought, and methods of eradication are depicted in the film, which will be distributed through department channels.

The new "movie" is one of the few that have been photographed largely through a microscope, and because of that fact is expected to attract added attention. It is designed for both scientific and popular use, and is expected to be much in demand among educational institutions. The department has more than 500 films in circulation, showing over 115 subjects. They have proved of marked value in extending the work of the department.

READY TO TEST HAY SAMPLES TO SET UP STANDARD GRADES

Sample bales of hay are being collected by the Bureau of Markets, United States Department of Agriculture, from producers, shippers, and consumers for the purpose of establishing standards for hay. The work is provided for by an act of Congress, and includes analyses of the hay samples in order to determine the importance of the factors now used in determining the grade of the commodity, including the color, mixture, and texture. Moisture determinations and other analyses to ascertain the relative feeding value of various hay mixtures will also be made.

The work is in charge of a specialist from the Hay, Feed, and Seed Division of the Bureau, and the laboratory has been established at 201 S. Strand Street, Alexandria, Va.

The equipment used includes separating tables especially constructed for this work, display tables for use in color determinations, and racks and boxes for holding the various type-samples as well as a hay cutter and a grinder operated by a 15-horsepower motor. These two machines cut and grind the hay to a degree of fineness suitable for making the moisture tests and chemical analyses. An electric drying oven, also constructed especially for the work, is used in the moisture tests and in reducing the hay to a uniform moisture content for the other analyses.

The standardization work is now well begun and it is expected that tentative grades for timothy and perhaps clover will be promulgated before the close of the fiscal year.

SHOULD EXTEND STUDIES TO COST OF OTHER CROPS

Pressing need for adequate and comprehensive studies of the cost of producing such crops as corn, oats, sugar beets, beans, rice, and other products, together with studies relating to the organization of various types of farms and ranches, was expressed by the Secretary of Agriculture in his annual report to the President. Valuable contributions to the available data regarding the cost of producing farm products, particularly cotton, wheat, and beef cattle, he said, have already been made.

"There has been a constant demand from the public generally, but more especially from farmers and farm organizations, for the results of these studies; and it has been repeatedly urged that they be extended and others undertaken," the Secretary declared.

"Such studies furnish the farmer information which enables him to reduce expenses or otherwise to increase his profits. If he makes full use of it, he will be in position to adjust his operations from time to time to those enterprises which will yield a satisfactory profit, to add to his individual income, and, ultimately, to influence the prosperity of his community. Cost studies also inform the general public regarding the cost of producing farm products and should tend to bring about a more general realization on the part of the consumer of the necessity of paying prices which will adequately reward the farmer and secure the necessary supplies in the markets."

Protecting Farmers Against Fake Insecticides.

By Dr. J. K. Haywood, Chairman, Insecticide and Fungicide Board, United States Department of Agriculture.

In the enforcement of the insecticide act, officials of the United States Department of Agriculture have had some wonderful and weird "remedies" brought to their attention.

A preparation sold as a remedy for all kinds of diseases of trees was found to consist of approximately 80 per cent table salt and the remainder consisted of equally "powerful" ingredients. This great "remedy" was sold by an "itinerant tree specialist," who "guaranteed to exterminate" tree diseases and naively informed his credulous victims that tree diseases were caused by uneven temperature and overproduction of wood which causes the sap to become congealed in the "arteries" of the trees. He compared the treatment of tree diseases to the treatment of human diseases and consigned to the scrap heap all the conclusions and results of scientific investigators, insisting that he was the discoverer of the only true method of treatment. And this wonderful remedy may be bought, ladies and gentlemen, for the modest and insignificant sum of only $3 per can, cash money.

Unhampered by Facts.

Another "remarkable" preparation was offered to the poultryman for the guaranteed extermination of vermin in his flocks by the simple expedient of adding a few drops to the drinking water, which became effective through the pores of the chicken and thus killed the lice on its back. This was an interesting theory to the scientists of the department, since chickens have no pores except two small ones at the base of the tail. This seeming obstacle to the practical working of the remedy meant nothing at all in the young life of its discoverer, who without hesitation denounced the department and impatiently pointed out the feather holes to prove his assertion that chickens did in fact have pores.

The treatment of diseased trees by the injection or innoculation method also seems to be a favorite of some "tree specialists." Cyanide capsules were used by one of these gentlemen in his "treatment" and many promising orchards were irreparably injured until the department got on his trail.

A combination of salt bricks with a little sulphur has been sold for destroying lice and ticks on cattle. "Simply put the brick in the pasture and let the cattle lick it and—presto! away go the lice and ticks." So said the manufacturer, but the insecticide board of the department failed to agree with him and he is now "specializing" in some other treatment which is certain to remove shekels from the purses of his victims.

Read Labels Carefully.

Apparently it is only necessary to devise some treatment which is simple and easy to administer and the silver-tongued fakers are able to "put it across." The department advises all purchasers to write for information regarding the demonstrated and established treatments which may require more time and labor, but which are known to be safe and the best available treatments. Carefully read the labels and see if the seller has dared to put in print the verbal promises he makes. If so, the department will get him if he don't watch out and if he has made false and exorbitant claims.

The disinfectant which makes a strong odor, but which does not kill any germs; the insecticide or fungicide which is not effective against insects or diseases, or which positively injures the plants or crops; all of these things are receiving the attention of your Uncle Samuel who is endeavoring to prevent the billion and a half dollars of annual losses to crops and animals through the ravages of insects and disease.

DEPARTMENT'S STATEMENT ON FERTILIZER SITUATION

(*Continued from page 1.*)

this theory under changed conditions of a falling market.

"The larger manufacturers allege that, in order to provide their enormous tonnage, it is necessary for them to contract for a considerable part of their raw materials several months before their prices are set. At this particular time they claim to have purchased or contracted for a large part of the materials for the spring trade of 1921 before the beginning of the break in prices of fertilizer materials. The smaller manufacturers, of whom there are around 750, make no such claim, but on the contrary, many of them have stated that they were unable to quote prices because they had not bought their materials and did not know what they would cost.

"As the figures submitted to the department by the larger manufacturers themselves showed that the actual cost to them of the ammonia and potash already purchased, and the probable cost of the additional material they expected to purchase, was not above the average prices prevailing on September 25, above referred to, they, after conference with the department, decided to lower accordingly the unit cost of potash and of ammonia in determining the prices of their mixed fertilizers. In the meantime, however, the prices of raw materials have continued to decline, as forecasted in the department's letter, with the result that on November 15 the estimated average purchase price of ammonia was $4 a unit, representing a decline of $1 a unit since September 25. Since November 15 there have been further substantial reductions in the prices of raw materials.

"In connection with the negotiations, a further important situation has developed, namely, that the larger manufacturers, in determining the prices of their mixed fertilizers, have figured acid phosphate at a price which is 20 cents per unit lower than for the fall of 1920. The trade journals, on the other hand, show that the price of 68 per cent Florida pebble phosphate rock was quoted from $6.85 per ton in June and $11.50 per ton in September and that the basis has been changed from f. o. b. Tampa to f. o. b. mines, making an additional difference of about $1.20 per ton. They also show that the quoted price of bulk acid phosphate increased from $18.50 to $20 per ton. The Federal Trade Commission, in its report on the fertilizer industry, indicates that the large fertilizer manufacturers have practical control of the phosphate situation through the ownership of acid phosphate plants and of mines and factories and through the existence of long-time contracts at low prices with other than their own mines.

"The department has urged the mine owners, the larger fertilizer manufacturers, and the producers of acid phosphate to make some concession to the smaller manufacturers by lowering the price at which they can purchase rock and acid phosphate. They reply that, on account of the strike in the Florida pebble district in 1919 and the car shortage, the stocks of rock and acid phosphate are so low that they have difficulty in obtaining sufficient quantities of these materials for their own use. Apparently the greater part of the rock that is mined above the contract requirements of the larger concerns is held for export, and a domestic buyer without a long-time contract is compelled to pay $11 to $12 a ton as against $6 a ton, which is about

the average for the domestic contract rock.

"The principal acid phosphate manufacturers stated that their price to contract purchasers was materially lower than the quotations in the trade journals for noncontract or cash purchases. They stated that practically their entire production was sold under long-time contracts, that they had nothing to sell outside of these contracts, and that the quotations in the trade journals were based on resale lots where money was needed or storage capacities had been exceeded. It is evident, therefore, that the needs of the larger manufacturers are provided for, whereas the source of supply of the smaller manufacturers is seriously curtailed and the prices which the smaller manufacturers have to pay are greatly in excess of contract prices. Within the past two weeks, however, the acid phosphate price has declined from $20 a ton to $17 a ton on the basis of Baltimore quotations, and the price will probably continue to decline as the stocks on hand are, in reality, large. Information has reached the department that not only is the cost of material falling but that the cost of manufacture is also decreasing.

"The Lever Food Control Act does not authorize the fixing of prices of fertilizers, but manufacturers who exact an unjust or unreasonable profit will be subject to prosecution. Notwithstanding the fact that some of the raw materials used in the manufacture of fertilizer were purchased at prices higher than those now prevailing, the department feels that, in view of existing market conditions, the prices of mixed fertilizers quoted by manufacturers for the spring trade of 1921 are too high. The consuming public is vitally concerned in this matter for the reason that the maintenance of high prices for fertilizers, at a time when the prices of farm products have greatly declined, may result in a curtailment of the use of fertilizers and a reduction in acreage and in yield per acre of crops planted. The opportunity is presented, as shown above, for a greater range in fertilizer prices for the spring season of 1921 than is usual under normal conditions. If the prices the manufacturers are now putting forth, which are based upon the unit costs of September 25, prevail during the entire season, it will be necessary for the individual farmer who uses fertilizers to exercise unusual care in shaping his operations so as to avoid undue risk of financial loss in his effort to maintain normal production of essential crops."

Saving is the quickest road to opportunity. Buy War Savings Stamps.

Favors Continuing Purchases of Land To Enlarge National Forests in East

The National Forest Reservation Commission, which authorizes the purchase of lands for eastern national forests, at a meeting held November 29, recommended to Congress a continuation of Government purchases of forest land and the appropriation of adequate funds to carry on the work. A large number of business and civic organizations, including the American Paper and Pulp Association, the National Wholesale Lumber Dealers' Association, the National Lumber Manufacturers' Association, the National News Print Association, and the Chamber of Commerce of the United States, have already gone on record in favor of enlarging the national forest lands in the East. The great importance of the work has been made evident through the report on the Capper resolution submitted to Congress last spring, which showed 80,000,000 acres of denuded and unproductive timber lands in the United States, while the cut-over area is increasing at the rate of 4,000,000 acres a year.

Extension of Work Authorized.

The commission authorized the extension of the purchase work to Pennsylvania and New York, and the location of a purchase unit on the headwaters of the Allegheny River, with a view to lessening the danger from river floods at Pittsburgh and at other places located below Pittsburgh on the Ohio River.

The commission authorized the purchase of 11,098 acres of land in the White Mountains and the Southern Appalachians at an average price of $5.04 per acre. Of the lands approved for purchase one tract of 1,458 acres in Grafton County, N. H., was offered at $7.50 an acre. The purchase of two tracts in Augusta and Shenandoah Counties, Va., having an area of 289 acres, was authorized at an average price of $2.90 an acre. Two tracts in Madison County, N. C., having a total area of 2,948 acres, were approved for purchase at $4 an acre, and 1,345 acres of timbered land in Burk County, N. C., at $7.50 an acre. There were also approved for purchase 608 acres in seven tracts in Winston and Lawrence Counties, Ala., at an average price of $5.19 per acre, and 4,450 acres in Arkansas, chiefly in Polk, Montgomery, Scott, and Yell Counties, offered by 27 different owners, at an average price of $3.82 an acre. Purchase of 7,000,000 feet of spruce timber at $3 per thousand feet was also authorized by the commission. This timber is in the White Mountain National Forest, N. H., but was reserved from sale at the time the land was purchased. This acquisition will enable the Government to control cutting operations upon approximately 1,500 acres of land, thus securing proper forest management and consideration of public interests.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended December 11, 1920:

Management of Growing Chicks. Farmers' Bulletin 1111.

Milo, a Valuable Grain Crop. Farmers' Bulletin 1147.

Cowpeas: Utilization. Farmers' Bulletin 1153.

Aspen Borer and How to Control it. Farmers' Bulletin 1154.

Angoumois Grain Moth. Farmers' Bulletin 1156.

Feeding Cottonseed Products to Live Stock. Farmers' Bulletin 1179.

The Cost of Producing Cotton. Department Bulletin No. 896.

Cooperative Cane-Sirup Canning: Producing Sirup of Uniform Quality. Department Circular 149.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1111; Department Bulletin No. 896; Department Circular 149.

BOLLWORMS FROM ABROAD.

The pink bollworm is a persistent invader, port inspectors of the Federal Horticultural Board, United States Department of Agriculture, have recently found. A short time ago some iron bands were shipped from Egypt by way of Philadelphia to show the method of baling cotton in that country. These bands were wrapped in burlap. It occurred to the bureau's inspector that caution was necessary and he examined the burlap, discovering two pink bollworms. In another case, 156 bales of old bagging which had been used for cotton were shipped from Rotterdam, Holland. Inspection at the port of Philadelphia revealed 142 cotton seeds sticking to the burlap and 12 of them carried bollworms.

Report on Adulteration and Misbranding of the Seed of Redtop

Seed of redtop was secured during the calendar year 1919 in the open market, in accordance with the following paragraph in the act of Congress making appropriations for the United States Department of Agriculture:

"Where such samples (seeds of grasses, clover, or alfalfa and lawn grass seeds secured in the open market) are found to be adulterated or misbranded, the results of the tests shall be published, together with the names of the persons by whom the seeds were offered for sale."

In carrying out the provisions of this act 902 samples of redtop seed were secured and analyses made under the direction of Mr. E. Brown, botanist in charge of the seed laboratory, Bureau of Plant Industry, and publication is here made of the anaylses of the samples found to be adulterated or misbranded, together with the names of the seedsmen by whom they were sold or offered for sale.

Of the 902 samples obtained from 436 firms as redtop seed 57, or 6½ per cent, were found to be adulterated or misbranded through being mixtures of redtop and timothy seed. These adulterated or misbranded lots were purchased from 33 firms, situated in widely different locations in the United States. In the case of only one of the lots, the analyses of which follow, was there any statement by the firm selling the seed as to the percentage of pure seed or germination, and in the case of that one sample the label attached to the seed showed a percentage of pure seed 20 per cent higher than that found on analysis.

The Department of Agriculture will continue to examine and report promptly as to the presence of adulterants and dodder in any sample of seed submitted for that purpose. According to the location of the sender, these samples may be submitted to the seed laboratory at Washington, D. C., or to any of the following laboratories maintained through the cooperation of this department: Branch seed-testing laboratory, agricultural experiment station, Columbia, Mo.; branch seed-testing laboratory, Oregon Agricultural College, Corvallis, Oreg.; branch seed-testing laboratory, Purdue University, La Fayette, Ind.; branch seed-testing laboratory, agricultural experiment station, Berkeley, Calif.; branch seed-testing laboratory, College Station, Tex.

RESULTS OF TESTS OF SEED OBTAINED IN THE OPEN MARKET AS REDTOP SEED AND FOUND TO BE ADULTERATED OR MISBRANDED

Seed offered for sale or sold as redtop seed by—		Seed obtained by—	Seeds and inert matter found upon analysis of samples.			
Name of dealer.	Address.		Redtop seed.	Timothy seed.	Other seed.	Dirt and chaff.
			Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Adams Seed Co., T. Lee	417 Walnut Street, Kansas City, Mo.	Mail (sample)	58.97	15.70	8.51	16.82
		Purchase (bulk)	59.15	14.43	7.34	19.03
Burt & Co., N. J.	110 North Main Street, Burlington, Iowa	Mail (sample)	66.88	12.39	9.48	11.65
		Purchase (bulk)	68.93	11.88	7.87	11.32
Carpenzer Seed Co.	Provo, Utah	Mail (sample)	68.60	9.46	7.13	14.81
		Purchase (bulk)	67.84	9.46	8.07	14.63
Chatfield Milling & Grain Co.	509–523 North Water Street, Bay City, Mich.	Mail (sample)	78.77	6.89	2.56	11.81
		Purchase (bulk)	78.11	6.75	3.09	12.05
Clossman Hardware Co.	Zanesville, Ohio	Mail (sample)	69.22	12.72	2.60	15.46
		Purchase (bulk)	67.17	13.98	2.34	16.51
Colorado Seed Co., The	1515 Champa Street, Denver, Colo.	Mail (sample)	76.57	10.59	1.89	10.95
		Purchase (bulk)	75.47	10.02	1.96	12.55
Currie Bros. Co.	384 East Water Street, Milwaukee, Wis.	Mail (sample)	51.42	12.34	8.72	27.52
		Purchase (bulk)	51.91	11.19	7.55	29.35
Currie & Co., A.	130–132 Wisconsin Avenue, Milwaukee, Wis.	do	78.40	11.78	3.70	6.12
Derryberry Co., M. E.	Nashville, Tenn.	do	64.31	24.27	2.23	9.19
Funk Bros. Seed Co.	Bloomington, Ill.	Mail (sample)	75.57	15.55	2.03	6.85
		Purchase (bulk)	76.02	14.93	2.05	7.00
Gorman-Gammill Seed Co.	2328–2330 Second Avenue, Birmingham, Ala.	Mail (sample)	80.84	10.32	2.19	6.65
		Purchase (bulk)	80.76	10.06	1.77	7.41
Grand Junction Seed Co., The	Grand Junction, Colo.	Mail (sample)	78.47	13.09	2.29	6.15
		Purchase (bulk)	77.55	13.04	3.04	6.37
Hamilton Hardware Corporation, The	90 Bank Street, Waterbury, Conn.	Mail (sample)	44.06	45.00	3.77	7.17
		Purchase (bulk)	74.67	10.06	4.75	10.52
Hardin, Hamilton & Lewman	327–329 West Main Street, Louisville, Ky.	Mail (sample)	72.97	6.97	4.20	15.86
		Purchase (bulk)	70.31	7.09	5.15	17.45
Harvey Seed Co.	65–69 Ellicott Street, Buffalo, N. Y.	Mail (sample)	60.58	12.64	1.12	25.56
		Purchase (bulk)	67.49	8.74	1.67	22.10
Hayes Produce Co.	524–526 North Kansas Avenue, Topeka, Kans.	do	74.71	14.96	2.08	8.25
Jenkins & Co., F. A.	Norwalk, Ohio	Mail (sample)	79.79	17.04	.56	2.61
		Purchase (bulk)	79.38	16.96	.57	3.09
Jones, Robert P.	59 Public Square, Lima, Ohio	Mail (sample)	72.43	13.93	1.39	12.25
		Purchase (bulk)	70.29	15.19	2.89	11.63
Leifer Bros. Seed Co.	104 East Markham Street, Little Rock, Ark.	Mail (sample)	82.87	5.43	1.57	10.13
		Purchase (bulk)	83.15	5.39	1.80	9.75
Lumb Hardware Co., The	124 Main Street, Zanesville, Ohio	Mail (sample)	78.05	11.24	.97	9.74
		Purchase (bulk)	83.46	5.79	.75	10.00
McCoocy & Co., J. H.	400 North Main Street, Hannibal, Mo.	do	61.55	17.44	2.58	18.63
Manthey's Seed Store	208 East Fourth Street, Cincinnati, Ohio	Mail (sample)	68.13	8.31	5.62	17.94
		Purchase (bulk)	67.74	9.71	5.98	16.57
National Seed Co.	101 West Main Street, Louisville, Ky.	Mail (sample)	52.61	12.42	8.47	26.50
		Purchase (bulk)	56.82	13.06	9.79	20.33
Prunty, Chas. E.	9 South Main Street, St. Louis, Mo.	do	80.19	5.33	2.77	11.71
Rusconi, D.	126–128 Sixth Avenue, West, Cincinnati, Ohio	do	71.31	12.99	2.71	13.08
Schisler Seed Co., A. W.	704–710 North Fourth Street, St. Louis, Mo.	do	82.33	6.15	1.63	9.89
Scobie & Parker Co.	507 Liberty Street, Pittsburgh, Pa.	do	76.81	15.85	.50	6.84
Smith Seed Co., J. C.	1014 Broad Street, Columbus, Ga.	Mail (sample)	81.03	5.66	1.16	12.15
		Purchase (bulk)	82.45	7.71	1.39	8.45
Springfield Seed Co.	Springfield, Mo.	Mail (sample)	77.11	6.30	2.78	13.81
		do	62.81	11.63	4.73	21.11
		do	61.43	18.57	4.38	15.62
		Purchase (bulk)	75.32	6.64	4.84	13.00
Vulcan Hardware Co., The	do	Mail (sample)	68.72	19.96	.89	10.43
		Purchase (bulk)	67.97	19.41	1.15	11.47
Weltz's Sons, Leo.	Wilmington, Ohio	do	72.19	13.32	2.74	11.75
Young & Sons Co., C.	1406 Olive Street, St. Louis, Mo.	do	74.26	9.07	1.30	15.37
Wood Curtis & Co.	Sacramento, Calif.	do	58.47	16.51	2.46	22.56

Approved:
D. D. Ball,
Acting Secretary of Agriculture.

Wm. A. Taylor,
Chief, Bureau of Plant Industry.

AGAIN JUSTIFY NATION'S FAITH IN THEIR ABILITY TO PRODUCE

(Continued from page 2.)

While expressing doubt that there is any single solution for the situation now facing the farmers, Mr. Meredith declared that there are many steps which should be taken to place agriculture on a more satisfactory basis and to stabilize the business of farming, not in the interest of the farmers alone, but in the interest of the Nation as a whole. "We must see to it," he said, "that the road between the producer and the consumer is open and direct, and that the farmers have a free and competitive market in which to dispose of their products. We must omit no effort to improve our marketing machinery and practices and to furnish necessary market information, so that farmers may take full advantage of modern business methods in the distribution of their commodities.

"We must adopt every feasible means to enable the farmer to adjust himself to changes in economic conditions, such as have recently occurred. It ought to be a fact that when the farmers of the country produce abundantly the consuming public will be liberally supplied with food at reasonable prices, the farmer taking his profit because of large production and the consumer receiving his increment of benefit from having available an adequate supply at a reasonable cost. In general, we should expect it to be true that the farmer's condition is improved in direct proportion to the number of bushels of wheat or corn and the number of bales of cotton he produces. It frequently happens, however, that when all farmers have extraordinarily good crops during the same year low prices leave him worse off than he has been in other years with short crops and high prices. One thing that would help to remedy this is some means, wherever feasible, of carrying over to periods of low production the surplus from years of high production. More attention to marketing and the development of a latent consumption demand in years of large supply will also be helpful."

Makes Recommendations.

Important recommendations contained in the report are:

Studies in the cost of marketing so that the proportion of the consumer's price received by the producer and the proportion received by various marketing agencies can be ascertained.

Extension and development of cooperative marketing work.

Establishment of a world market-reporting service to make promptly available comprehensive and dependable information as to production, supply, prices of, and demand for agricultural commodities in different parts of the world.

The consolidation of the Bureau of Markets and the Bureau of Crop Estimates for the sake of economy and greater efficiency.

Material expansion of the studies of the cost of producing farm products.

Thorough-going scientific study of the whole problem of farm labor.

The making of every feasible effort to aid the farmer in obtaining necessary personal credit.

Broader studies of the methods employed and results obtained by farmers in attempts to improve their credit through united and cooperative action.

The direction, through thorough-going studies, of national thought toward solution of the problem of farm ownership.

Increased attention to land settlement and colonization, to the end that the buyer may have full and complete information for his guidance.

An expansion of the studies of life on the farm, to the end that the better things of life may be brought in increasing measure to the rural community, so that strong, intelligent, well-seasoned families will not abandon the farming community for the city.

Proper encouragement of all feasible means to limit the hazard of agricultural production.

Expansion of the work already begun by the department in finding means for utilizing surplus and waste farm products.

A still further spread of extension work among farm women, and an acceleration of research work in home economics.

That the nitrate plant at Muscle Shoals be put in operation, to the end that this Nation may escape once for all from dependance upon foreign nitrate fields.

The appropriation by Congress at its next session of funds to continue the Federal-aid road program, to be expended under the terms of existing legislation, with certain modifications, at the rate of $100,000,000 a year for a period of five years, beginning with July 1, 1921.

The appropriation of sufficient funds to permit the department to cooperate effectively with all the States prepared to work with it in preventing and controlling forest fires and other causes of forest devastation.

The reforestation of devastated lands within the national forests and the enlargement of the national forests by further land purchases and exchanges of land or timber for private lands of equal value.

A restoration of forest experiment station work to the status it had before being curtailed by reduced appropriations, and the establishment of at least one station in each of the main forest regions of the country.

Action toward developing the public resources in Alaska by lodging authority in men on the ground to act without waiting to consult distant superiors, as has already been done by the Forest Service in administering the national forests.

Amendments to a number of important laws administered by the Department of Agriculture to the end that their enforcement may be more effective.

Authorization of the Secretary of Agriculture to appoint a director of scientific work and a director of regulatory work, to devote their attention to development and coordination of research and regulatory activities of the various branches of the department and their coordination with similar lines of work in the various States.

Appropriations sufficient to permit of justice to the employees of the Department of Agriculture in the matter of salaries and equipment for work.

INTEREST IN IMPROVING PET STOCK.

Applications to recognize the improved breeding of such stock as Belgian hares, wild ducks raised in captivity, game birds, and dogs is making it difficult for officials of the Bureau of Animal Industry, United States Department of Agriculture, to determine just where the dividing line between farm live stock and other animals, including pet stock, should be drawn in developing the "Better Sires—Better Stock" campaign. The classes in which particular efforts toward improvement by the use of purebred sires are being directed include cattle, horses, asses, swine, sheep, goats, and poultry.

A supplementary list of pet stock and miscellaneous animals is being kept, and thus far 176 such animals, all bred to purebred sires, have been listed. The predominance of interest, of course, is in the improvement of general farm live stock, of which nearly 400,000 head are now listed with the department.

AMERICAN-GROWN BULBS.

Tulips, narcissus, and hyacinth bulbs, to the number of 325,000, sent out in the Congressional seed distribution this year were grown at home. Work of the United States Department of Agriculture in its Puget Sound gardens has shown that that region is adapted to the cultivation of the so-called Dutch bulbs, which, in the past, have been almost entirely imported.

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NATIONAL FOREST RECEIPTS INCREASE DESPITE FIRE LOSS

Service Forced to Reject New Business Because of Shortage in Personnel.

Report Shows Timber Sales for 1920 Exceeded Figures of Previous Year by $435,067—One of the Severest Conflagration Seasons Known.

Despite the fact that a depleted and overburdened personnel made it necessary for the Forest Service to refuse at some places to take on new business, the receipts from the national forests in the fiscal year 1920 exceeded those of 1919 by $435,067.42 and set a new high mark of $4,793,482, according to the annual report of Chief Forester W. B. Greeley. The year was also marked by one of the severest and most protracted fire seasons ever known, which necessitated the expenditure of considerable sums for the protection of the national forests and required a deficiency appropriation of $2,950,000 in addition to the regular funds provided for the purpose.

Timber Demand Growing.

"The increase in receipts from timber sales," says the report, "reflects the increasing demands being made upon the national forests as privately owned timber is exhausted and the forest industries move westward. If funds are provided for the examination and sale of national forest timber now in demand, the receipts from timber sales may be expected to increase still more rapidly until the cut reaches the limit that must be imposed to maintain a continuous yield from the forests and give stability to the industries and communities dependent upon them."

It is pointed out that while the receipts of the national forests have increased 93 per cent from 1915 to 1920, the total appropriation for the Forest Service, exclusive of deficiency fire-fighting funds, has increased only 8 per cent. The receipts for 1920 were 10 per cent greater than for 1919, and an equal increase for the current fiscal year may be expected, the report states, unless too much new business has to be rejected on account of lack of funds and trained employees. The appropriations for the current fiscal year, it is pointed out, were increased only 3 per cent.

In addition to the actual revenue, according to the report, there is an enormous return to the public through the protection of the five hundred odd billion feet of timber for future use, the protection of the headwaters of innumerable feeders of navigation, irrigation and hydroelectric power, and the recreational facilities made available to hundreds of thousands of people. "There will always be national resources not measurable in dollars which in public benefit exceed the receipts paid into the Treasury," the report says.

During the fiscal year about 1,000,000 acres in the Thunder Mountain region of Idaho were added to the Idaho and Payette Forests. More than 654,000 acres in the Eastern States purchased under the Weeks law were also proclaimed as national forests. The appropriation for the purchase of such lands has been virtually exhausted, the report states, and little progress was made in acquiring new lands.

1,420,208 Acres Purchased.

All told, the purchases aggregated at the close of the fiscal year 1,420,208 acres in the White Mountains and Southern Appalachians, and 12,094 acres in the

(*Continued on page 15.*)

SPECIALISTS PREPARE LAW FOR FARM FIRE INSURANCE

The draft of a proposed model State law providing for the organization and regulation of farmers' mutual fire insurance companies has been completed by specialists in the Office of Farm Management and Farm Economics, United States Department of Agriculture. Statistics have been tabulated on these companies with a view to obtaining comprehensive and reliable data relative to the cost of property protection through such organizations. The specialists also have prepared an outline of a system of keeping records for the farmers' mutual companies.

One of the points given special attention is that of hail insurance for farm crops. The department has just published a bulletin on this subject, containing historical as well as statistical and legal data.

ADVISES PROVISION BE MADE FOR CONTINUING ROAD PLAN

Should Not Disturb Principles Embodied in Act of 1916, Says Secretary.

Hopes Congress Will Provide Additional Funds at Next Session so That There Will Be no Halting in the Work—Building of Forest Roads Important.

Immediate consideration should be given by Congress to plans for extending the Federal aid road-building program, the period for which by the original act, as amended, terminates with the close of the present fiscal year, declared the Secretary of Agriculture in his annual report to the President. In order that there may be no halting in the work it is hoped, he said, that the Congress will, at its next session, provide additional funds, to be expended under the terms of existing legislation with certain modifications, at the rate of $100,000,000 a year for a period of five years, beginning with July 1, 1921.

Future legislation, the Secretary said, should not disturb the principles embodied in the act of 1916, which have been tried out and found to be so satisfactory, and only those changes should be made which experience has clearly shown to be desirable. He said:

"The principal modifications in mind relate to the problem confronting the Western States in highway work because of the existence in many of them of large areas of public lands, and to the maintenance of Federal-aid roads by the State highway agencies rather than by the counties. The Association of State Highway Officials, at its meeting in December, 1919, unanimously approved the continuance of the present plan of Federal participation in road building with these and other modifications.

"The fact that the present appropriation may not be entirely expended by June 30, 1921, does not lessen the necessity of immediate action. Both the Federal and State highway departments should know, as promptly as possible, the program for the next five years, in order that the work may be adequately planned and the engineering and admin-

istrative details carefully executed. Forty of the State legislatures will be in session this winter, when it will be necessary for them to make the requisite provision for meeting future Federal apportionments. From every standpoint, therefore, it is essential that legislation for the continuance of the program now under way be promptly enacted.

Forest Roads.

"Provision should be made also for the continued building, on an adequate scale, of roads within or adjacent to the national forests. The forest road systems are very closely related to those of the States, and the major forest projects form important links in essential State and interstate highways. There are approximately 15,000 miles of roads within the forests which connect with State and county highway systems. The building of forest roads, therefore, is an important part of the general road development plan of the West, both within and without the forest areas. In addition, the transportation of forest products, the protection and administration of the forests themselves, and their utilization for recreational purposes are all dependent upon the construction and maintenance of serviceable roads."

In view of the abnormal conditions which have prevailed since 1916, the report stated the progress that has been made in placing a large highway improvement program under way is surprisingly good. In the three years, 1917, 1918, and 1919, there were approved 677 projects, calling for the construction of 5,790 miles of road and involving a total cost of $56,418,673, of which the Federal share was $23,931,618. During the fiscal year 1920, 1,670 projects submitted by the States, involving the improvement of 16,670 miles and a total allotment of $109,830,366 of Federal funds, were approved. At the end of the year 14,910 miles of Federal-aid roads, on which $103,925,094 of Federal funds had been allotted, were under consideration and in various stages of completion, while 1,677 miles had been entirely completed. Preliminary engineering investigations have been made on 4,603 miles of forest roads and construction has been completed, or is in progress, on 1,300 miles.

Construction Difficulties.

The work of actual construction has suffered from several causes, which varied in intensity in the different States. They include: (1) The difficulty of securing transportation facilities for road materials. During the season of 1920 the assignment of open-top cars for transporting coal resulted in tying up and slowing down many of the highway projects under construction. (2) The lack of materials, particularly cement, steel, and culvert pipe. In general, the short supply of sand, gravel, crushed stone, and other similar materials has been due to transportation difficulties rather than to a shortage of production. (3) The lack of available contractors and labor. This condition was not general, however, and was partially caused by the unwillingness of contractors to undertake new contracts rather than to an actual lack of sufficient organizations. (4) Difficulties experienced in disposing of road bonds. This situation existed only in certain States, and was due largely to the advance in interest rates generally after the rates for the bonds had been fixed.

In order to provide for the full correlation of the work of the department and of the State highway agencies, the advisory board has been enlarged to include all the members of the executive committee and the officers of the Association of State Highway Officials. There is thus available to the department, in formulating administrative policies, the advice and experience of the State executives in actual charge of highway work, representing all parts of the country.

Showed Need for Good Roads.

"It required a great national catastrophe to awaken the American public to the inadequacy of our transportation facilities and to the fact that we must depend largely upon our highways, in conjunction with motor vehicles, when a sudden expansion in transportation is essential," said the Secretary. "Our experiences during the last three years have clearly demonstrated that the failure earlier to inaugurate a sound road-improvement program has retarded the effective development of one of our most vital national requirements. The use of the motor vehicle for highway transportation has increased tremendously within a short period. In 1906 only 48,000 motor vehicles were registered in the United States. By 1914 the number had risen to 1,700,000, while the registrations now total nearly 8,000,000, exclusive of motor cycles. The actual vehicle-mile use of our roads, it is estimated, has increased more than 500 per cent in strictly agricultural communities and more than 1,000 per cent near the larger centers of population. These figures indicate the extent to which community and short-haul transportation will be served by better highways."

The Federal-aid road act of 1916, as amended, has resulted in putting in motion a great program of highway development, nation-wide in its extent. The original act appropriated $75,000,000, extending over a five-year period, for the construction of rural post roads in cooperation with the States, and $1,000,000 a year for a period of 10 years for the building of roads within or adjacent to the national forests.

Few Crops Suffer As Much Loss From Waste As the Sweet Potato

It is doubtful if any crop produced in the United States suffers as much loss from waste as the sweet potato. A survey by the Bureau of Plant Industry of the United States Department of Agriculture showed that the loss to the crop by preventable disease was more than 50 per cent, but often after the crop is harvested growers fail to take advantage of the possibilities of the great Northern market. The country would eat sweet potatoes, but the field is far from being developed to its full capacity.

Charts prepared by the Bureau of Markets show that 11 States south of Virginia and Kentucky which grow the Southern varieties produced approximately 146,360 cars of sweet potatoes and marketed 4,020 cars, or less than 3 per cent of the production. The remaining 16 States growing the Jersey type produce approximately 26,273 cars and market 11,353 cars, or about 45 per cent of the production. The 11 States which produce 85 per cent of the total crop ship only 26 per cent of the total shipments, while the other States producing only 15 per cent of the total crop ship 74 per cent of the total shipments. A study of the situation on the part of the Bureau of Markets in cooperation with State agricultural colleges, has convinced specialists that conditions can be remedied.

One great lack in the Southern sweet potato centers is proper and sufficient storage facilities to hold the crop until it can be disposed of, says the Department of Agriculture. It is believed that such facilities would not only permit marketing of a much larger proportion of the crop, but would obviate the necessity of selling at any price which is offered for spot sales. Farmers in the back country are also often insufficiently informed on efficient methods of gathering and grading. To correct these conditions an exhibition car called "the Sweet Potato Special," was sent out by Clemson Agricultural College and the United States Department of Agriculture under special arrangements with several railway companies. The special covered 21 stations in 10 counties of South Carolina. More than 2,100 farmers visited the car and were shown proper

methods of handling and grading, and cautioned against costly mistakes. Among the exhibits was a model of a practicable sweet potato storage house, such as are built by private parties or by cooperative organizations fostered by the extension service.

RELATION OF NATIONAL PARKS TO NATIONAL FORESTS SHOWN

A clear distinction of fields exists between national forests and national parks, says the Secretary of Agriculture in discussing the value of the national forests as recreation grounds in his annual report to the President. "Areas of scenic grandeur or natural wonders which are exceptional in character should be incorporated in national parks." But the national forests "must be administered with definite provision for recreational use along with the development and use of their material resources."

The national parks must be protected against any form of commercialization, declares the Secretary. Unless they are limited to areas in which the beauties and wonders of nature are in reality so dominating that they justify prohibition of conflicting forms of use, it will not be possible to deny demands which will be made for the use of water power for irrigation and even for timber and forage. "Nor should we build up under the name of national parks public properties which are open to various forms of commercial exploitation and which are in fact merely national forests under a different designation," the Secretary says. "Above all, the national conception of our great parks as areas so fine and wonderful that they belong to the whole country should not be cheapened by making them simply a means for local development or advertisement.

"Areas whose dominant public values are economic do not belong in the parks," the Secretary asserts. "They should remain or be placed in the national forests if they serve the primary functions of the forests—the production of timber or the protection of watersheds. On the other hand, the economic service rendered by the forests should be no bar to the administration of small areas at many points within them for public recreational purposes or for the protection of their natural beauty." In fact, the Secretary says, for every one of the national parks there are literally hundreds of areas in the national forests whose highest public use requires development of their recreational value, though it would not justify their administration as national parks.

MARQUIS WHEAT TAKES FIRST PLACE IN NORTHERN PLAINS

Introduced in United States in 1913, Now Leads Common Varieties.

Department of Agriculture Experiments Show That Canadian Grain Gives Highest Yield and Is Less Susceptible to Rust Infection.

That Marquis wheat is the leading variety of common wheat for growing in the Northern Great Plains is the conclusion reached by specialists of the United States Department of Agriculture as a result of varietal experiments with spring wheat conducted at 11 field stations in the northern half of the Great Plains area chiefly in cooperation with the State experiment stations. Details of the experiments, including discussions on the principal varieties, how and when they came to the region, and how to distinguish them, are contained in Department Bulletin 878, Varietal Experiments With Spring Wheat on the Northern Great Plains, recently issued by the department.

Introduced in 1913.

Marquis wheat was first introduced into the United States from Canada in 1913, but is now more widely grown than any other variety. It is short-strawed and early maturing, which characteristics sometimes enable it to escape rust and drought.

A demand for information on comparative yields of varieties and their resistance to disease was developed in the Great Plains area by severe losses which have occurred recently, due principally to drought and rust. Although crop yields have sometimes been low, land values have continued to increase in about the same proportion as in other sections. This has increased the cost of production and, with a return to lower prices for wheat, it is essential that the poorly adapted varieties be eliminated.

Hundreds of foreign and domestic varieties of wheat have been obtained by the department and tested. In preliminary nursery experiments many of them did not show themselves fitted for culture in the semiarid sections. These varieties were rejected and only the more promising ones were selected to be grown in plat experiments.

In Bulletin 878 the annual yields of the spring wheat varieties grown during the seven years, from 1913 to 1919, are shown for each station. A summary of the yields shows that, in general, the Marquis variety is the highest yielding common spring wheat. It has been included in all of the experiments each year. The better varieties of Durum wheat have outyielded Marquis at all stations but one. The Kubanka Durum wheat outyielded Marquis at eight of the ten stations where it was grown.

Has Less Rust Infection.

Data on rust infection were obtained at seven stations. Marquis wheat shows an average rust infection of 17.7 per cent in twenty observations. Most of the important commercial varieties of common spring wheat showed a higher percentage of rust infection than Marquis, while all varieties of Durum wheat showed less rust.

The leading varieties of spring wheat grown at the eleven stations were milled in an experimental mill and the flour baked into bread in order to determine their relative values for flour and bread making. It was found that growing conditions and disease had much influence on the percentage of flour obtained, Marquis wheat yielding as low as 56.4 per cent of flour from sections where it had been affected by rust, while under favorable conditions it produced as high as 75.8 per cent of flour. The average yield of flour from 37 samples of this variety was 70.2 per cent. Several varieties of common wheat produced distinctly lower percentages of flour than Marquis. Preston (Velvet Chaff) and Haynes Bluestem produced about the same percentage as Marquis. Prelude was the only variety of common spring wheat which had a distinctly higher flour yield than Marquis, the difference being 2.6 per cent. All varieties of Durum wheat, however, yielded a higher percentage than Marquis, except D-5, a red-kerneled Durum wheat which is low in milling value. Each wheat sample was analyzed for nitrogen and the crude protein content determined. Marquis wheat had an average protein content of 15.3 per cent, and other common spring wheats differed only slightly from it.

Judged by Loaf Volume.

In concluding the experiments, flour made from each variety of wheat was baked in order to determine the expansion or strength of the dough, the quality of the gluten, and the resulting texture and lightness of the bread. The average loaf volume obtained from 37 samples of Marquis flour was 2,342 cubic centimeters from 340 grams of flour. This was a greater volume than was obtained from any other variety of wheat except one. All varieties of Durum wheat have a smaller loaf volume than Marquis.

Copies of the bulletin may be had free by writing to the United States Department of Agriculture, Washington, D. C.

PAST PERFORMANCE IS SAFEST BASIS IN BREEDING SELECTION

Stock Improvement Closely Related to the Control of Heredity.

Principles of Reproduction and Methods by Which Characteristics of Parents May Be Transmitted or Eliminated Outlined in Department of Agriculture Bulletin.

Raising the standard of farm animals and poultry and bringing out certain desirable characteristics by selective breeding is receiving more attention as methods of farming for profit become intensified.

The breeding of domestic animals dates back to remote antiquity, when the most advanced races of the Old World were still on the border line between savagery and barbarism. It far antedates any but the simplest mechanical arts. Yet while our knowledge of the laws of nature as they apply to machines has reached very great magnitude and complexity, it is comparatively only a few years since the principles of breeding have been more than a collection of unrelated traditional beliefs.

Old Superstitions Still Current.

The same superstitions on which the shepherds of Asia based their practices at least 30 centuries ago are still widely current, while the one sound principle known to the ancients—selection of the best for breeding stock—is still largely neglected.

The principles of successful animal breeding, as they have been learned by practical experience in the United States and older countries, and by careful scientific study along definite lines, are outlined in Department Bulletin 905, recently issued by the United States Department of Agriculture.

This bulletin goes into the first principles of reproduction and follows the means by which certain characteristics of one or the other parent are transmitted to the offspring, the methods of selection best suited to intensify the desirable characteristics and weed out the undesirable, the characteristics which can with certainty be expected to continue from one generation to another, those which are uncertain, those which will blend, and those which can not be inherited.

Aside from mere increase in numbers the purposes which the breeder is likely to have in mind fall under two more or less distinct heads, namely, production of a uniform product, and improvement. A uniform product depends on such control over the heredity of the stock that matings can be made with the assurance that the offspring will be of a certain definite type for which there is a demand. Improvement is, of course, closely related to control over heredity, but the methods which give the greatest control are not necessarily those which lead to the most rapid improvement.

Basis for Selection.

In a broad sense the whole subject of practical breeding comes under the head of selection. The most obvious basis for such selection is the performance of the animals themselves. Unfortunately, the merits of most kinds of live stock can not be measured directly. The study of conformation as an index of useful qualities has accordingly held a high place as a basis for selection of breeding stock. Live-stock judging has this for its purpose. An animal of good breeding is a better one to breed than one of equal individual merit but of mixed or common breeding. Pedigree, though often misused, is a valuable aid to selection, apart from following a general policy of mating. The soundest basis of all for selection of breeding stock is the record of past performance as a breeder, provided the record is sufficiently extensive to give a fair test.

The bulletin gives many valuable pointers on the selection of cattle for milk and butterfat production and for beef; the breeding of sheep for wool and mutton; of hogs for pork; and of poultry for eggs and meat.

It falls in line with the "Better Sires—Better Stock" movement of the Department of Agriculture, by which farmers are being encouraged to build up their flocks and herds rapidly through the selection of purebred sires. The new bulletin, which contains 67 pages and numerous charts and illustrations, is entitled, Principles of Live Stock Breeding. It may be obtained at the nominal cost of 15 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

BUFFALO HERDS IN UNITED STATES INCREASE RAPIDLY

The American Bison Society reports that in January, 1920, there were 3,393 wild and tame buffalo in the United States. This encouraging report sets at rest the very real fear that existed not long ago lest the native buffalo, which once roamed the western plains, would soon become extinct.

Of the nine Government-owned herds, two of the largest under the care of the United States Department of Agriculture are located in the Wichita national game preserve, Oklahoma, and on the national bison range at Dixon, Mont. The herd on the Wichita preserve now numbers 154, including 28 calves of this year. In this herd 4 bulls and 12 cows are 10 years of age or over and one cow is 29 years old. The 15 animals that constituted the original Wichita herd came from the New York Zoological Park.

In accordance with the provisions made by the 1919 appropriation bill for their care, it is planned this year to dispose of some of the surplus buffalo in the Government herds. Public parks and municipalities are the largest patrons. By distributing the animals over the country, if disease or misfortune overtakes the main herds, there still will be stock left with which groups could be built up again.

The buffalo in the United States have increased about 300 per cent in 12 years. In 1908 there were 1,116 wild and tame buffalo in this country; at the beginning of 1920 there were 3,393. Canada has a larger number—5,080. This is due to the fact that several years ago, when the Pablo herd in Montana, belonging to Michel Pablo, a half-breed Indian, was for sale, the Canadian Government bought the animals, sufficient interest not being exhibited by Americans at that time to make it possible to retain them in this country. The total number of wild and tame buffalo on the North American Continent at present is probably more than 9,000 head.

LIVE-STOCK AND MEAT GRADES SHOWN BY TRANSPARENCIES

Two large cases of illuminated transparencies showing market grade of live stock, animal carcasses, and wholesale meat cuts were among the exhibits of the United States Department of Agriculture shown in the grain and hay section of the International Live-Stock Show at the Chicago stockyards, November 27 to December 4, illustrating phases of the work of the Federal Bureau of Markets. The transparencies supplemented the exhibition of the live-stock market-reporting service operated under the direction of the Chicago office of the live-stock and meats division of the bureau. This exhibit was first shown this year at some of the State fairs, where it attracted much favorable comment. The hay, feed, and seeds division of the bureau displayed charts showing the feeding values and costs of various hays, also sample bales of several varieties.

Free Range and Cleanliness Are Two Prime Factors in Breeding of Poultry

Hazards which sometimes accompany the incubation of eggs are largely avoidable. Fertile eggs from vigorous breeding stock are necessary in order to obtain good hatches. How to produce such eggs, select them, and hatch them with sitting hens is told in Farmers' Bulletin 1106, just published by the United States Department of Agriculture. This bulletin is prepared especially for beginners and boy and girl poultry club members, who usually begin their work on a small scale by carrying on their hatching operations with sitting hens.

Free range for the breeders, according to the bulletin, is most desirable for the production of fertile eggs with vigorous germs, but all eggs produced from such hens should not be used for incubation. Eggs that are abnormally small and poorly shaped or those having thin or very poor shells should be eliminated. Dirty eggs or those badly soiled should not be used. If it is found necessary to set slightly soiled eggs they may be cleaned by rubbing lightly with a damp cloth, care being taken not to rub off any more of the natural bloom than is necessary.

Should Avoid Old Eggs.

It is never advisable to use for hatching, the bulletin states, eggs that are more than two weeks old. In freezing weather eggs should be collected two or three times a day to prevent their being chilled. Neither a hen nor an incubator will hatch strong chicks from eggs containing weak germs or from those which have not received proper care.

In preparing the nest for the sitting hen, it is recommended in the bulletin to put from three to four inches of damp earth or a piece of grass sod in the bottom of the nest before the nesting material is put in to provide moisture. When the hen becomes broody, and before she is transferred to the nest for sitting, she should be dusted with insect powder or sodium fluoride. In doing this hold the hen by the feet with the head down, working the powder well into the feathers. This should be repeated about the eighteenth day of incubation, so as to be sure that there are no lice present when the chicks are hatched.

The hen should be moved at night from the regular laying nest into the nest where she is to be set. The latter nest should be in some out-of-the-way place where the hen will not be disturbed. In order to make sure that the hen will continue to stay in the new nest, she should be started with one or two china nest eggs. If, at the end of the second day, when the hen should be permitted to leave her nest for food and water, she returns in a short time, the nest eggs may be replaced with the eggs that are to be incubated.

Cleanliness Is Essential.

Throughout the period of incubation the eggs and nests should be kept clean. Sometimes it will be necessary to change the nesting material. Eggs should be tested twice during the incubation period, preferably on the seventh and fourteenth days, and all infertile eggs and those with dead germs should be removed. When the eggs begin to hatch, the hen should be confined and not disturbed until the hatching is complete. If she becomes restless remove the chicks as they are hatched and keep them in a warm place until the hatch is complete, when all should be returned to the mother hen.

Copies of the bulletin may be had free by writing the United States Department of Agriculture, Washington, D. C.

Specialists Start War on Dry Rot Which Ruins Incense Cedar Trees

Though incense cedar is not a rare wood, pencil manufacturers and cabinet makers have difficulty in keeping a sufficient quantity of this material in stock. It is estimated that there is a supply measuring 11 billion feet in this country, of which 10 billion are located within the boundaries of California. The difficulty is that the heartwood of incense cedar is commonly honeycombed by a dry rot which makes a large part of it valueless for timber. On account of this, experienced lumbermen consider incense cedar an inferior tree, and frequently reduce estimates by 30 to 50 per cent. It costs as much to cut and bring to market a diseased tree as a sound one, and lumbermen hesitate to work with a wood which gives such a large average loss.

Can Distinguish Rot.

Dr. John S. Boyce, of the Bureau of Plant Industry, United States Department of Agriculture, has finished a very complete study of this dry rot of incense cedar. The results as published in Department Bulletin 871, The Dry Rot of Incense Cedar, show that a change of methods of marking, scaling, and bucking—that is, designating what trees are to be cut, estimating the amount of timber in the trees, and sawing the timber into log lengths—will ultimately alter the status of this tree—that sound trees and logs can be distinguished from decayed.

The dry-rot infection enters the trees through wounds caused by fire or through the scars resulting from the natural pruning of the lower limbs. Successful control of forest fires will go far toward eliminating this rot in the future forest. But the present stand of incense cedar is already infected. It is pointed out, however, that for incense-cedar trees growing under the best conditions, the rot is not serious in a tree which is under 210 years of age. In trees growing under less favorable conditions the critical age is 165 years. In the respective localities, the trees above these ages must be expected to be largely decayed; hence only trees below these ages should be marked for cutting if only perfectly sound trees are wanted.

May Utilize Older Trees.

It is, however, possible to utilize many older trees if due attention is given to the external signs of decay, which are pointed out. In many cases the rot extends for only a short distance in the tree and the rest of the timber is sound and good. The careful bucker will accordingly cut off those parts of the trunk which are too defective to be worth logging, and only the sound logs and those partially defective but still merchantable will be removed. In this way substantial expense can be avoided.

In the future-managed forest no tree will be allowed to reach an age to permit it to become seriously infected. Economic conditions of the future will undoubtedly also favor this relatively early cutting.

BRING QUILTS TO DARKEN WINDOWS AT "MOVIE" SHOW

When residents in some sections of Mississippi attend a motion-picture show they carry quilts with them to darken the windows. This unique form of cooperation is employed in the exhibitions of motion pictures furnished by the United States Department of Agriculture. Through the cooperation of a bank at Grenada, Miss., films are sent out by motor truck which carries its own power plant. The pictures are shown in many communities that have never seen a film before, and as buildings are not generally adapted to daytime exhibitions the announcement carries a request that at each exhibition center a committee be

formed to assure sufficient quilts to be used for curtains.

The circular also takes into account the unimproved roads of many of the back-country communities and carries a warning that "if rains get the roads in such shape that we can not get to you on the date announced, we will try to get to you later." Three shows a day is the regular schedule for the week.

BETTER SIRES CAMPAIGN PASSES THREE THOUSAND MARK

The Better Sires campaign recently passed the 3,000 mark. Altogether 3,210 persons have agreed in writing to breed all live stock kept on their farms to pure-bred sires only. It is one of the results thus far accomplished by the United States Department of Agriculture, in co-operation with the States and county agents, in a systematic campaign begun only 14 months ago to exterminate scrubs—especially scrub sires—throughout the United States. Breeders and owners of all classes of live stock and poultry are cooperating in the effort which eventually will mean a higher quality average of the country's live stock.

32,171 Square Miles of Southern Area Freed from Cattle Tick During 1920

The relative progress made by the Southern States originally infested with cattle ticks is shown by a tabulated statement just issued by the United Sates Department of Agriculture. The figures are complete to December 1, 1920, the end of the fiscal year for this class of work. The total tick-infested area on July 1, 1906, when systematic eradication began, was 728,565 square miles. On December 1, 1920, 70 per cent of that area had been freed of ticks and released from quarantine, leaving only 218,474 square miles infested with the pest. The area which still remains infested and therefore under Federal quarantine is as follows:

	Square miles remaining infested.
Alabama	3,252
Arkansas	19,632
Florida	47,980
Georgia	15,694
Louisiana	15,490
North Carolina	10,087
Oklahoma	4,047
Texas	100,606
Virginia	1,686

The total area released during the year 1920 amounted to 32,171 square miles. Owing to discontinued local effort to complete tick eradication in some areas released from quarantine, it was found advisable to requarantine counties and parishes during the last year as follows: Alabama, 1; Arkansas, 9; and Louisiana, 14; also a few portions of counties or parishes in these States.

Forestry Chief Urges National Action to Provide for Future Timber Supply

A demand is growing on the part of the wood-using industries and the public at large for a national policy of forestry which will insure adequate future supplies of timber and other forest products, according to Chief Forester W. B. Greeley. Figures gathered by the Forest Service this year, his annual report states, showed the extent of the depletion of the Nation's forests, and have served to focus attention on the fact that the country is short of growing forests and that something must be done at once. The acute shortage and sky-rocketing prices of lumber and newsprint early in the year also contributed to the growth of the movement.

The Forest Service is advocating a program based on the conviction that the problem is national and not local, and must be handled as such. Nation-wide protection from forest fire for all classes of forest land, Col. Greeley states, is the first and most essential step. It is his belief that the police powers of the States offer the best means of enforcing reasonable requirements against forest desiruction.

Legislation Is Needed.

The expense of fire protection, the Forester says, should be borne jointly by the landowner and the public. He holds that Federal legislation is needed to provide for a comprehensive plan of cooperation with the States in fire prevention and the development of forestry practice, and the extension of the national forests through purchases, through the inclusion of other timberlands now in Federal ownership, and through exchange.

There are still large quantities of timber in the United States, the report states, but they are not in the right place. More than 60 per cent of what is left lies west of the Great Plains, far from the bulk of the country's population, agriculture, and manufacture. The country is taking about 26 billion feet of wood from forests each year and is growing only 6 billion.

Much Idle Land.

"We have used up our forests without growing new ones," says the report. "At the bottom of the whole problem is idle forest land. The United States contains 326 million acres of cut-over or denuded forest containing no saw timber; 81 million acres of this amount have been completely devastated by forest fires and methods of cutting which destroy or prevent new timber growth.

"The area of idle or largely idle land is being increased by from 3 to 4 million acres annually as the cutting and burning of forests continues." These facts, together with the steadily increasing distance between the average sawmill and the home builder, "have had a vital bearing on the high cost of lumber, which during the year reached a prohibitive figure for many uses and checked the building of homes which is so urgently needed."

PROGRESS IN TICK ERADICATION, JULY 1, 1906, TO DEC. 1, 1920.

State.	Counties infested July 1, 1906.	Counties infested Dec. 1, 1920.		Counties released.		Area infested July 1, 1906.	Area infested Dec. 1, 1920.	Area released.	
		Whole.	Part.	Whole.	Part.				
	No.	*No.*	*No.*	*No.*	*No.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*P. ct.*
Alabama	67	2	3	62	3	51,279	3,252	48,027	94
Arkansas	75	25	7	43	7	52,525	19,632	32,893	63
California	15	.....	.....	15	.....	79,924	.....	79,924	100
Florida	51	47	.....	4	.....	54,861	47,980	6,881	13
Georgia	152	31	.....	121	.....	57,438	15,694	41,744	73
Kentucky	2	.....	.....	2	.....	841	.....	841	100
Louisiana	65	20	1	44	1	45,409	15,490	29,919	66
Mississippi	81	.....	.....	81	.....	46,362	.....	46,362	100
Missouri	4	.....	.....	4	.....	1,386	.....	1,386	100
North Carolina	75	20	1	54	1	37,363	10,087	27,273	73
Oklahoma	[1] 61	2	2	57	2	47,890	4,047	43,843	92
South Carolina	44	.....	.....	44	.....	30,495	.....	30,495	100
Tennessee	42	.....	.....	42	.....	16,987	.....	16,987	100
Texas	198	102	6	90	6	191,885	100,606	91,279	48
Virginia	30	3	1	26	1	13,918	1,686	12,232	88
Total	962	252	21	689	21	728,565	218,474	510,091	70

[1] Five of the 61 counties were only quarantined in part.

Upkeep of Cows and Labor Constitute 79.9 Per Cent of Milk Production Cost

What is the cost of milk production?

This is the question that has brought increasing concern to each dairyman. In answer to it, the United States Department of Agriculture, through the Dairy Division, conducted a series of studies to give dairymen reliable information on this subject. These studies were begun in 1915, but the most recent upon which any data have been published was begun in 1917, in Skagit County, Washington, about 70 miles north of Seattle. The report of this study is contained in Department Bulletin 919, Unit Requirements for Producing Milk in Western Washington.

A study of the results given in the bulletin shows that at the time of the study 56.4 per cent of the total cost of producing milk at the dairies investigated was for feed and bedding; 23.5 per cent for labor; 17.6 per cent for other costs; and 2.5 per cent for depreciation. The requirements for producing 100 pounds of milk during the winter were: Concentrates, 29.4 pounds; dry roughage, 92.9 pounds; succulent roughage, 143.3 pounds; bedding, 9 pounds; human labor, 1.9 hours; horse labor, .01 of an hour; other costs, $0.576. During the summer milk could be produced at much less cost, there being required a comparatively small amount of concentrates.

Winter and Summer Compared.

During the two years covered by the study, 44.5 per cent of each year's income from milk was obtained during the winter. During the first year records were obtained on 17 herds having an average size of 31.3 cows, with an average annual production of 7,369 pounds of 3.74 per cent milk per cow. During the second year 18 herds, 15 of which had been in the first year's work, had an average size of 28.6 cows and produced an average of 8,323 pounds of 3.59 per cent milk per cow. From each 100 cows in the herds during the two years, 55 freshened during the winter six-months period, and 42 during the summer season, while three cows did not calve during the year. Nearly one-half of the cows freshening dropped their calves during the months from February to May, inclusive.

Most of the milk in this section is sold for condensing purposes, and is delivered by motor truck to large milk condenseries. All the herds selected for study were representative of dairy conditions found in that section. It is the custom to hire milkers, who milk and take care of 25 to 30 cows per man and give their entire time to the herd.

Pastures Aid Production.

In western Washington the pasture plays a very important part in milk production, according to the bulletin. With cool weather throughout most of the summer, plenty of moisture, and a rich soil, there is abundant pasture until late in the fall. During the pasture season almost 60 per cent of the milk for the year was produced and at one-third of the yearly feed, bedding, and pasture cost. The annual pasture charge per cow amounted to 1.1 acres of $23.04. Such items as veterinary fees, medicine, disinfectants, and other items amounted to $1.45 per cow per year. It was found that the number of hours required to care for a cow did not differ materially between the summer and winter seasons. However, due to the increased flow of milk in summer, the time required to produce 100 pounds of milk in that season was materially less in summer than in winter.

NEW LEGISLATION NEEDED.

New legislation affecting the work of the Department of Agriculture is recommended by the Secretary of Agriculture in his annual report to insure purity of seeds, feeds, and fertilizer, to facilitate the marketing of live stock, and to continue the road-building program.

The importation into the United States of forage and like seeds is regulated by the seed importation act of August 24, 1912, but there is now no law to prevent the adulteration or misbranding of seeds shipped from one State to another. While it is not clear that Federal regulation of interstate commerce in seeds would be practicable, he said, it is clear that the enlargement of the department's authority and funds for testing and other investigational work, accompanied by full publicity, would produce valuable results. It has been suggested in the estimates, therefore, that authority be given to determine the purity, viability, and trueness to variety of seeds obtained in the open market and to publish the names of the persons responsible for the shipment or sale of those which are found to be adulterated and misbranded according to the standards established by the department.

"The need for legislation to insure the purity and wholesomeness of commercial feeds intended for domestic animals and poultry has been apparent for many years. While the food and drugs act is applicable to such feeds, it has been impossible under its provisions to prevent some of the worst forms of adulteration and misbranding. This matter should receive careful consideration, and a comprehensive law which will prevent the shipment in interstate and foreign commerce of worthless, adulterated, or misbranded feeds should be enacted as promptly as possible. In framing the measure it would be highly desirable to give the department authority to establish standards which will adequately protect the purchaser against articles that have little or no feeding value.

There is need also of similar legislation dealing with the adulteration, debasement, and false labeling of fertilizers and naval stores.

"Many measures designed to regulate and control establishments engaged in the handling of live stock and in the manufacture and preparation of meat and meat food products have been under public discussion. Several bills dealing with the problems involved are now pending in the Congress and are in various stages of consideration. Undoubtedly it would be desirable not only in the interest of the producer but of the consumer as well to enact legislation which would make it impossible for those dealing in live stock and its products to exercise undue control over marketing facilities or to impose unfair or unreasonable charges for their services."

LEAF-ROLLER DOES LITTLE DAMAGE.

A minute, green caterpillar, called the red-banded leaf-roller, has attracted attention through its attack on vegetable crops, particularly beans, sweet potatoes, asparagus, and corn, as well as strawberries and other plants. The extent of the damage, however, which has been investigated by entomologists of the United States Department of Agriculture is not large, seldom being sufficient to warrant artificial control measures.

This caterpillar rolls a leaf shelter, the interior of which is rather difficult to reach with insecticides. Ordinarily, the rolled leaves can be clipped and burned, as they are easily detected. Arsenate of lead, 2 or 3 pounds to 50 gallons of water, is recommended as a foliage spray when the leaf-roller becomes abundant.

Weekly News Letter

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WILL ASK CONGRESS FOR FUNDS TO AID FIGHT ON GIPSY MOTH

Congress at its next session will be requested by the United States Department of Agriculture to appropriate sufficient funds to undertake the extermination of the gipsy moth, which has recently made its appearance in a large area in New Jersey, says the Secretary of Agriculture in his annual report just made public. For years the department has successfully prevented the westward spread of the gipsy and brown-tail moths—great enemies of orchard and forest as well as shade trees. The infestation in New Jersey, evidently of long standing, was only recently discovered. It is known, according to the report, that trees from this area have been shipped to a number of points, thus indicating the possible occurrence of the insect in other sections of the country. All shipments of trees from the infested area are now being followed as closely as possible in order to determine the other points at which the insect may have become established.

"Every year," declares the Secretary, "demands are made upon the department, as in the case of the gipsy moth in New Jersey, for assistance in dealing with sudden and serious outbreaks of injurious insects, which often cause damage amounting to millions of dollars. As a rule, no funds are available for this purpose, and the department therefore is unable to take prompt and effective steps to eliminate the pests or to prevent their spread. If repressive measures were immediately undertaken, it might be possible completely to exterminate them; otherwise the outbreaks may get entirely out of hand and make necessary greatly increased expenditures, not to eradicate but merely to control them. It would be highly desirable, therefore, to provide a special appropriation, in the nature of an insurance fund, which could be used to meet emergencies of this sort, and a recommendation to this effect has been incorporated in the estimates."

MANY SURVEYS ON FARM COSTS AND ECONOMICS COMPLETED

Since the reorganization of the Office of Farm Management and Farm Economics of the United States Department of Agriculture in February, 1919, two important preliminary studies in the cost of production have been completed—wheat and cotton. A third, beef cattle, has been brought to the point of final tabulation, and a fourth, sugar beets, is is now well under way. A study of the Iowa "land boom" has been completed, also an investigation of hail insurance. Field work has been done in over a score of surveys of different kinds, including business analysis surveys, farm-life surveys, and studies of the economic aspects of ownership and tenancy. A study of the use of motor trucks on eastern farms has been completed. While important results have been secured, a number of projects outlined by the committee on reorganization, notably farm labor, rural credit, and taxation, have not as yet received adequate attention, owing to lack of funds.

TROUBLE CAUSING STOCK LOSSES SUBJECT OF PRELIMINARY STUDY

Recent losses of cattle in some sections of Texas from what is locally known as loin or back disease, the cause of which is unknown, have resulted in a call for assistance from the United States Department of Agriculture. A specialist of the Bureau of Animal Industry recently visited the area where losses had occurred and is now making a preliminary study of the ailment and the conditions likely to be responsible for it.

Unsteadiness of gait is usually the first symptom observed. It was found that within 24 hours after going down the affected animal may be unable to rise, although definite illness may not be apparent from the general appearance, i. e., from temperature, respirations, pulse rate, etc. Death may result in from 24 to 48 hours; on the other hand, animals not infrequently recover after being in a helpless condition for a period of from two weeks or a month. Animals that recover appear to be rather susceptible to second attacks.

Losses have been mainly confined to the warmer months, from May until October, and as far as could be determined the affection is limited to the low-lying Southeast Gulf territory extending inland not more than 100 miles.

The condition at the present time is seemingly an unwarranted cause for grave alarm. Certain individuals, nevertheless, have experienced sufficient trouble to prompt them to dispose of their calf crops rather than assume the risk of having their stock succumb to the affection as it reaches maturity.

If the losses continue to be serious enough to justify it the department will endeavor to make other investigations at a more opportune time to study a number of cases.

JAPANESE WALNUT MAKES VALUABLE TREE FOR SHADE

The Japanese walnut offers possibilities for landowners who are seeking to plant nut trees for shade or other purposes, say specialists of the United States Department of Agriculture. It is nearly as hardy as the black walnut and is by no means uncommon in Northern and Eastern States, where it is especially appropriate for farm and door-yard planting. For the present, seedling trees will have to be relied upon almost entirely, as very few budded or grafted trees are available.

This nut has been confused with the Persian or so-called English walnut, although the two are quite unlike. The Japanese is a dwarfish species, with dull green rough leaflets, often as many as 15 or 17 to the leaf, and bears nuts in racemes of a dozen or more.

The shells are thinner than those of the black walnut, but thicker than those of the better Persian walnuts. The flavor of the kernels is much like that of the American butternut.

POTATO-DISEASE CONFERENCE.

A conference of United States Department of Agriculture specialists and representatives of State agricultural colleges and experiment stations has been called by the Bureau of Plant Industry, to be held at the University of Chicago, December 29, to consider potato disease in the Western States. The department has recently completed a survey of the potato-growing districts of the West with particular reference to losses from disease. Fusarium blight, among other diseases, has caused such heavy damage as to threaten entire suspension of potato growing in some sections.

WHY CONTROL OF CROP PESTS IS IMPORTANT

By Dr. Wm. A. Taylor, Chief, Bureau of Plant Industry, United States Department of Agriculture.

When a plant disease or other crop pest destroys an important crop throughout a large area, it is easy to see how dangerous these pests are both to agriculture and to the country. The farmer whose crop is destroyed suffers through loss of his income; the consumer often through abnormally increased cost of his food supply. Occasionally, as in 1916, when the wheat crop of the United States and Canada was reduced approximately 280,000,000 bushels by black stem rust after the entire expense involved in its production, except that of harvest and threshing, had been incurred, the result is so serious as to endanger the stability of banks and of business generally in the devastated region and even, as in that case, to threaten the future of nations through impairment of food supply when needed for winning the great war.

Take Heavy Toll on Crops.

But spectacular and widespread destruction of crops is by no means the only harm worked by plant diseases. Every season and in substantially every important producing region they take heavy toll on crop production. Their existence without control constitutes one of the chief hazards which the farmer encounters increasing his cost of production, and ultimately the price which consumers must pay.

It has been difficult to determine even approximately the amount of damage done by plant diseases, but very careful estimates recently made by the pathologists of the State expriment stations and the Department of Agriculture indicate that in 1919 the production of 10 of the important cereal, fruit, and vegetable crops was reduced more than 650,000,000 bushels by plant diseases. This estimate does not include damage due to insects nor to adverse climatic conditions. In the same year the cotton crop was reduced nearly one and three-quarters million bales by plant diseases.

When it is remembered that substantially equal expenditures for labor and other items up to the point of harvest are required for the diseased and the healthy crops, it is clear that these pests constitute a most grievous and dangerous overload on agriculture, our basic industry.

These menaces to stable and economically sound production can be brought under control only through thorough, painstaking, technical research, followed by vigorous extension work through which to encourage adoption of remedial measures by farmers.

Must Aid Stabilization.

That stabilization of agricultural production, which is highly desirable from the standpoint of business as well as of the producer and the consunmer, can only come when farmers generally are able so as to shape their plantings that with normal weather the acreage planted will produce the approximate quantity required to meet the consuming demand. Until this is accomplished, seasons of shortage with prices painfully high to the consumer are certain to be experienced. Along with these will come years of excessive production in which the producer is compelled to bear destructive loss because prices are below the cost of production. For the correction of this destructive alternation of too little and too great crop production the development of effective control of plant pests is one of the most important factors.

CONTROLLING INSECT PESTS.

The work of controlling insect outbreaks has presented many difficult and complex problems to the United States Department of Agriculture, declares the Secretary in his annual report to the President. As an illustration the Secretary refers to the fight with the pink bollworm, which experts in this and other countries regard as probably the most destructive pest of cotton. The task of exterminating this pest, begun by the department in 1917, gave promise of success; but, according to the report, a new and serious situation has been presented by the discovery of the insect in a district in Louisiana not heretofore known to be infested and by its reappearance in southeastern Texas.

"The efforts to eradicate the pest are being prosecuted as vigorously as possible," says the Secretary, "but they are necessarily handicapped by the failure of the State of Texas to establish and enforce noncotton zones in the infested areas. Whether eradication can be accomplished in the circumstances is problematical, but, nevertheless, no steps should be omitted to prevent the additional drain on the South's most important money crop which the spread of the pink bollworm to other sections of the cotton belt would involve.

"The boll weevil, also, causes enormous damage to the cotton crop. But the department's experts, after many years of painstaking experiments, have now found a successful method of controlling the pest by dusting the plants with calcium arsenate. As a result, the manufacture and sale of this product has reached very large proportions. Through its enforcement of the insecticide and fungicide act, the purpose of which is to insure a high standard of purity and efficiency in insecticides and fungicides used in combating plant diseases and insects, the department is keeping off the market a great many tons of calcium arsenate of poor grade, which, if used, not only would fail to control the boll weevil but would seriously damage the cotton plants."

DESIGN SPECIAL BOXES FOR TRANSPORTING T. N. T.

The Forest Products Laboratory of Forest Service, United States Department of Agriculture, at Madison, Wis., is at present engaged in designing a box which will be the safest possible type to use in transporting T. N. T. This is at the request of the ordnance division of the Army which has 15,000,000 pounds of that powerful explosive to move. When T. N. T., dynamite, nitroglycerine, or any other high explosive must be transferred from one place to another the most careful precautions are none too careful. The proper design of the boxes is one of the factors which makes for safety.

In testing boxes, the Madison laboratory employs a standard box-testing machine designed at the laboratory. This consists of a hollow drum with a 20-foot diameter, in which the boxes to be tested are placed. The containers are filled with material of the same volume and weight as the explosives for which they are intended. The drum is slowly revolved, the box continually sliding down toward the bottom and bumping against the hazards inside the drum, until it finally breaks. Many boxes of the same kind are tested in the same way. If several break in one place that part is strengthened or changed until at last a properly balanced box for the purpose intended is obtained.

The boxes which are being tested for T. N. T. transportation are approximately 1 foot square and 18 inches long.

The savage lives within his income. Are you doing any better? Buy War Savings Stamps.

Devising Uses for Surplus Products An Essential Service of Department

Converting perishable farm products into commodities sufficiently stable that they can be carried from a season of excess supply to a season when they are needed is characterized as an essential service of the United States Department of Agriculture in the annual report of the Secretary of Agriculture to the President.

Industries founded on the utilization of surplus or waste products, he says, would be of tremendous value in meeting this problem.

Important Results Accomplished.

The Bureau of Chemistry has accomplished some important results along this line in recent years. On the basis of its investigations, for example, there has been developed a citrus by-products industry for the utilization of cull and surplus oranges and lemons, and a feasible method of utilizing corncobs, which always have been a waste product, has also been discovered. Department specialists have produced from it a large yield of adhesive suitable for pasting container box board.

"After this is removed," says the Secretary, "a considerable quantity of a lower grade product can be made, and the residue is practically pure cellulose, which can be used in the manufacture of a number of commodities, including a good quality of paper when mixed with a suitable quantity of wood pulp. After the processes for recovering all these articles had been worked out, it was discovered that a considerable quantity of a very valuable chemical—furfural—was formed, and methods of recovering it have been developed. Furfural is a basic intermediary in dye manufacture and, in addition, has great possibilities as a solvent and as a substitute for formaldehyde in the manufacture of plastics. Many other similar lines of investigation are actively under way, but these two illustrations clearly indicate what can be done toward opening up new industrial outlets for agricultural products.

Office of Development Work.

"It has been found, however, that the benefits of the important discoveries made by the scientists of the Bureau of Chemistry are not always fully realized. The difficulty is that of bringing about their commercial development. In order to meet this situation, there has been established in the bureau an Office of Development Work, the function of which is to aid in bringing the discoveries to the attention of business men and others. When new processes have passed the experimental laboratory stage, it becomes the duty of this new office, which is conducted by engineers rather than chemists, to investigate their commercial value and the cost and method of placing them on a commercial production basis. Efforts then will be made to inform manufacturers and business men regarding the opportunities for them to develop facilities for the utilization of the discoveries, so that the people of the country may secure full benefit of them."

SHOWS VALUE OF INTENSIVE DAIRYING TO A COMMUNITY

The manager of a cheese factory in Green County, Wis., has supplied the United States Department of Agriculture with statistics gathered from recent official records, showing the benefits of an intensive dairying industry to a community.

The county's assessed valuation is $60,000,000 and the dairy industry investment $50,000,000. The live-stock investment is $5,000,000 and the annual value of dairy products $8,000,000. There are 65,000 head of cattle, of which 40,500 are producing dairy cows, from which 88,000,000 pounds of milk are delivered annually to three milk condenseries and 113,000,000 pounds to 143 cheese factories. The county produces about 13,000,000 pounds of cheese.

The county had 3,500 automobiles in 1919, an average of one for every 6.1 persons. It has spent over $1,000,000 on macadam roads and has issued bonds for $3,000,000 toward a 10-year $4,000,000 program for 189 miles of concrete highways.

PERSONAL CREDIT FOR FARMERS.

One of the national problems demanding special attention at this time is that of short-time personal credit for farmers, in the opinion of the Secretary of Agriculture, expressed in his annual report to the President.

"It is generally recognized," he said, "that one of the problems demanding special attention at this time is that of short-time personal credit for farmers. In the case of a man who has paid for his farm, the supplying of personal credit raises, as a rule, no serious question. In the case of the renter, however, and of the young farmer who is just starting out as an owner, the question of short-time credit is a difficult one. In such cases credit can and should be based, to a considerable extent, upon character and productive ability. To deny credit to the honest, ambitious, and energetic farmer because he has little tangible security to offer is to lessen the productivity of available capital and to discourage a man who, in the future, should be a land-owning farmer. While the bankers are, in many cases, showing a commendable interest, the need is for a system which will enable the man without collateral to secure funds for productive agricultural enterprises. Without doubt this important problem should receive careful consideration, and every feasible effort should be made to aid the farmer in obtaining the necessary personal credit."

VELVET BEANS GOOD GRAZING CROP FOR CATTLE AND HOGS

Velvet beans are an important grazing crop for cattle and hogs in the South in autumn and winter, according to specialists of the United States Department of Agriculture. They are not grazed well by horses or mules, or by any live stock until after they are well matured or frosted. As the leaves, vines, and pods decay but slowly when subjected to weather conditions, velvet beans will furnish feed until early spring. It is usually better to let the crop stand until it is well matured, or until it is killed by frost, as the leaves will be off the plants at that time and the corn which has been planted at the same time may be gathered with less difficulty.

The amount of grazing which will be afforded will, of course, vary with the growth of the crop and the quantity of corn not gathered, but it is the custom with many cattlemen to allow one-third to one-half acre a month for each steer or cow. The usual period for pasturing velvet beans is about three months, but this may be shortened or lengthened as deemed advisable. When the period is longer because of large acreage in proportion to the number of cattle there is necessarily some loss of feed through decay.

Hogs should be permitted to follow the cattle, as they will consume practically all the beans which the cattle fail to get. A common practice is to allow one or two hogs in addition to the cattle for each acre of beans. A good stand of velvet beans should produce about 150 pounds of beef and 100 pounds of pork an acre.

Establishes New Field District in Alaska To Meet Growing Needs of Forest Service

The establishment of a new field district comprising the Chugach and Tongass National Forests in Alaska, with headquarters at Juneau, is announced by the Forest Service, to take effect January 1, 1921. The new district will be in charge of District Forester Charles H. Flory, who is at present Superintendent of National Forests in Alaska. The establishment of the new district was decided upon in order to facilitate the transaction of the growing business of the two Alaskan national forests, and is in line with the policy of decentralized administration of the Forest Service. Nearly all of the business of the Alaskan forests will be transacted in the future on the ground by the district forester and the local forest officers, the officials of the Forest Service state.

Sales of Timber Increasing.

The Tongass and Chugach National Forests comprise 20,574,000 acres of land and include practically all of the best timber along the coast of Alaska. The sales of timber are increasing steadily and receipts from the two forests for the last fiscal year exceeded $100,000. With the development of a paper industry, which is now in sight, officials of the Forest Service expect that the receipts will be greatly augmented. A sale for 100,000,000 feet of pulp wood has already been made to a company which will establish a paper plant, and a sale of one and one-half billion feet is in prospect.

The establishment of a paper-making industry, according to members of the Forest Service familiar with Alaskan conditions, will do much to stabilize the development of the Territory. Alaska, it is said, is now in a condition somewhat like that of a worked-out mining camp. The rich placer mines have been exhausted, present prices of metal make it unprofitable to mine many of the lode claims, the salmon fisheries have been depleted, and there is no good market nor means of transportation for such agricultural crops as are raised. Yet the undeveloped resources of the Territory are very great. A paper industry will be perpetual because the timber on the National Forests will be so cut as to insure regrowth, and the establishment of large manufacturing plants with the necessary towns for the workmen will afford steady employment for a considerable number of people, will increase transportation facilities, and will create a market for crops produced locally.

The administration of the National Forests has already been largely decentralized, the officials of the Forest Service state, but the establishment of a new district in charge of a district forester with large discretionary authority to transact Government business will further facilitate dispatch.

LAND OWNERSHIP PROBLEM.

One of the gravest social and economic questions with which the United States is faced is that of land ownership, according to the Secretary of Agriculture in his annual report. With the passing of the great public domain, and with it our free lands, the problem has taken on added importance. He said:

"Considerable work already has been done in this field, but it has not yet been adequately covered. Careful studies are being made of the methods of renting farm land and of improving tenant contracts, which at present are frequently inadequate. They encourage in many instances soil depletion, which, if not corrected, will in the long run seriously affect our production. They also encourage itinerancy on the part of tenants and constitute a barrier to community social betterment. The causes of tenancy and what it means to the country must be placed squarely before the American public, so that its importance may be generally recognized. If this is to be done, studies of a thoroughgoing nature must be initiated and carried to completion."

GLAD TO GET THE WOLF BUT DEMURS AT EATING IT

Wolf steak is at a discount in Yell County, Ark.

Demand was brisk for a time on the part of one prospective customer and leading citizen, but as facts later revealed, this was due largely to unbelief in the source of supply. The offering which was made was declared too tough for consumption. Nevertheless, the United States Biological Survey, which purveyed the offered delicacy, increased materially in the estimation of farmers and stock raisers in the vicinity.

The steak came from a wicked "varmint" which had heavy stock-killing records for the last five years. Efforts of local hunters to kill this animal had failed, due to its cunning in eluding traps and ability to keep out of range of rifles. A trained hunter and trapper was finally put on the trail by the Government predatory animal inspector for Oklahoma and Arkansas.

One prominent stock raiser who had contributed to the lupine larder was friendly but skeptical. "You kill that wolf and I will eat a nice big steak from him," was the way he expressed himself. The wolf was caught in a skillfully set trap and brought in alive. Before being killed it was viewed by a large number of residents, some of whom had been losers through its depredations, among them the skeptical stockman who had been promised his order of wolf steak. After looking over the animal "on the hoof" he decided that the meat of such a hardened sinner would be too tough for eating. Instead, he offered his services in securing State cooperation with the predatory animal extermination work of the United States Department of Agriculture.

Both Oklahoma and Arkansas are still considerably infested with wolves, coyotes, and bobcats. A successful campaign against the animals is being conducted by the Biological Survey in the Western States.

EASTER LILIES GROWN FROM SEEDS INSTEAD OF BULBS

The practicability of propagating Easter lilies from seed, rendering us practically independent of Japanese and Bermuda bulbs, has been demonstrated at the experimental farm of the United States Department of Agriculture, at Arlington, Va. Lily seeds have been brought to full flower within 15 months of the time of planting. The lily stalks produced at Arlington bore from 5 to 15 blossoms apiece, while from 4 to 5 has been considered a good average by florists using the imported bulbs.

The United States last year imported 10,000,000 lily bulbs from Japan at an expense of approximately $2,000,000. In addition to the better results and saving of expense, lily plants propagated from seed at home are found to be almost free from diseases which infest the foreign bulbs. Contrary to general impression, it has been found that the lily is a perfectly hardy plant and bulbs do not need a warm climate for propagation. Bulbs planted November 1st, near Washington, 4 inches below the surface, are held dormant so that they are not injured by frosts, and begin development with the first warm weather. On the other hand,

bulbs planted in a warmer climate commence to grow before cold weather and fail to winter successfully.

The department's work in lily cultivation is quite revolutionary. It has attracted wide attention from florists and requests for propagating material in the shape of seed and bulblets have been numerous. While the department can not comply with these requests, every one interested in growing Easter lilies from seed can insure himself such seed by pollinating a few flowers of his Easter lilies this spring.

EXPERIMENTS WITH SHIPPING BOXED APPLES IN BOX CARS

About 1,300 cars of boxed apples shipped in box cars were injured by freezing last year, and the fruit growers sustained a loss of approximately $1,000,000. Because of this and the fact that it seems impossible to secure an adequate amount of refrigerator equipment, the Bureau of Markets, United States Department of Agriculture, is cooperating with the Wenatchee Valley Traffic Association to ascertain whether an ordinary box car can be made to take the place of a refrigerator car when the latter are not obtainable. The tests are being conducted with four box cars, each equipped with a different method of ventilation and a refrigerator car under standard ventilation, to provide a means of comparison.

The first box car has a ventilator cut in each end. The second has the side doors open 8 inches. The third has one side door open with a 6-inch baffle, to shoot the air into the car, and the fourth box car has no ventilation whatever. Delicate equipment records the air currents and temperatures and an accurate chart is kept. In publishing the preliminary report of the experiment, which is not entirely completed, the Bureau of Markets says that the use of ordinary box-car equipment under any sort of ventilation will not prove satisfactory for shipping boxed apples. Such produce can be safely shipped by box car only when the weather ranges from temperate to cool. The ordinary box car provides no protection whatever against changes in external temperature. The best means of ventilation is to open both doors 8 inches, so fastening them as to prevent robbery.

Under average conditions, the cowpea compares quite favorably in yield with other crops commonly grown for hay, while it ranks very high in yield of feeding value. The cowpea will yield from 1 to 2 tons of hay to the acre, and frequently, under very favorable conditions, much larger yields are secured.

High Price of Farm Lands Serious Factor in Farm Ownership

During the last five years the selling price of farm land and improvements in the United States increased 65 per cent, according to estimates made by the Secretary of Agriculture in his annual report to the President. Between March, 1919, and March, 1920, the increase was 21.1.

Although the data for the 1920 census are not yet available, it seems probable, the Secretary said, that while the average price of farm land and improvements per acre increased only 26 per cent during the 40 years from 1880 to 1920, the price in 1920 is two and one-half times that of 1910 and five times that of 20 years ago.

"The price of farm lands is one of the important factors in the problem of farm ownership," said the Secretary. "It is estimated that between March, 1919, and March, 1920, the increase in the selling price of farm land and improvements was 21.1 per cent. In the last five years the increase has been 65 per cent.

Net Return Less.

"In some sections the net return on the purchase price of farm lands is considerably less than the ordinary rate of return on first mortgages and similar investments. The rental rate of cash leases, also, is frequently less than half the rate of return on mortgages. Studies made by the department indicate that, in certain regions, the recent advance in the price of land has still further aggravated this condition. Such a situation is unfortunate, for it increases the difficulties of a tenant who is seeking to become an owner. If he borrows a considerable part of the purchase price of a farm at from 5 to 7 per cent and then finds that the investment will earn little more than 3 per cent, it will be impossible, in many instances, for him to discharge the debt.

"While the increase in land prices is, to some extent, a reflection of the general upward movement in the level of commodity prices, it must be regarded, in part, as an indication of the increasing scarcity of land available for agricultural use. This scarcity is not statistically apparent, for, in addition to the area of improved land used for crops, pasture, and other farming purposes (exclusive of range land), there is nearly an equal area that is potentially available after clearing, drainage, irrigation, or for utilization by dry-farming methods. With local exceptions here and there, however, this land is either inferior to that now in use or can be made available for farming only through heavy outlays for improvement.

"War conditions stimulated an expansion of the area devoted to crops, estimated at 10.1 per cent from 1914 to 1918, or an increase of 3.4 per cent in the per capita acreage. This was effected by utilizing pasture land for crop production and by bringing into use other uncultivated areas. The expansion was particularly marked in the case of small grains. Since the armistice there has been a reduction in crop acreage. From 1919 to 1920 there was a decline of 5.4 per cent in the acreage of 20 principal crops. Apparently the reduction has been brought about by returning the land to pastures and by discontinuing the use of the low-grade areas which were temporarily utilized.

What the War Did.

"These changes should be instructive to those who would reduce the prices of farm products by bringing into use large areas of new land. It is clear that if prices had been extraordinarily remunerative to the farmer compared with the returns on capital and labor in industry, we would not witness this reduction of the acreage in cultivation, but, on the contrary, a continued enlargement of it. While war conditions temporarily increased the net cash income of the farmer and stimulated a temporary expansion of the crop area, this was due in large measure to the response of the farmers to the insistent call for more food, particularly wheat and rye, the principal bread grains. It is of not small significance that the contraction in acreage has been most extreme in the case of these crops, estimated at 31.5 per cent for winter wheat, 16.5 per cent for spring wheat, and 22.6 per cent for rye.

"Much loose thinking and many wrong conclusions are based on false impressions concerning the profitableness of farming. The increase in farm profits during the war was inevitably transitory. Moreover, measured in purchasing power, they shrank rapidly as a result of the rise in general commodity prices. Owing to the highly competitive character of his business and the lack of organization, the farmer has had no effective means of preventing the impairment of his profits; his only recourse has been to migrate to the city and change his occupation, a course actually followed by many. In the light of these facts and the fear of a continued decline of profits, it is clear why the tendency to expand the crop area has been suddenly reversed."

Variation in Weight of Package Foods—Different Commercial Usages Studied

How much variation in the weights of package foods will occur from the weights stated on the label when the weighing and filling is done in accordance with good commercial practice is a question that arises frequently in the work of the food packer and the food-control official. An answer to the question will be found in Department Bulletin 897, recently issued by the Bureau of Chemistry, United States Department of Agriculture, entitled Weight Variation of Package Foods.

Methods of Weighing Discussed.

As the result of an extensive investigation of the commercial weighing and filling of package foods, including a study of the machines used in weighing and filling, by the Bureau of Chemistry, it is now possible to determine whether any particular lot of package food has been weighed and filled in accordance with good commercial practice. The bulletin, containing the results of the investigation, outlines methods of weighing as practiced by 126 commercial firms, describes weighing machines in use, reports experiments on good commercial practice methods, shows the maximum errors both by calculation and observed results, compares hand weighing with machine weighing, and gives specifications for good commercial practice in weighing.

The food packer can use the information contained in this bulletin to check and regulate his methods of filling his packages of food. He can determine whether or not he is putting into the package the amount of food he aims to put in. The food official can determine, when he finds any shipment of food in package form which is incorrectly labeled as to weight, whether the variation is probably due to the variations that will naturally occur in packing food, or whether it is probably due to intention to pack short weight.

The results of the experiments are applicable to such products as baking powders, buckwheat flour, cereals, cocoa, coffee, cloves, corn flakes, corn starch, cream of tartar, cream of wheat, farina, flour, hominy, honey crisps, maize, malt breakfast foods, nutmeg, oatmeal, pancake flour, pepper, puddine, rice, rolled oats, salt, soda, split peas, shredded coconut, sugar, tapioca, tea, and wheat flakes.

Good Practice in Packing.

Good commercial practice in packing such foods is specified as follows:

1. That packages of 5 pounds and below be weighed net; larger packages may be weighed gross and tare.

2. That the following types of scales be used: For packages of 5 pounds and below: Even-arm balance, 1-pound beam, ¼-ounce graduation.

For packages over 5 and under 25 pounds: Even-arm balance, 2-pound beam, ¼-ounce graduation.

For packages of 25 pounds and above: Platform scale, 50-pound beam, ¼-pound graduation.

3. That scales meet the tolerances prescribed in Bureau of Standards Circular 61, and be used at 20 per cent or more of their capacity for packages of less than 25 pounds and at 10 per cent or more of their capacity for larger packages. Tare weights may be made on the same scale as the gross weights.

4. That the exact balance be estimated to within one-half of the sensibility reciprocal of the scale and the poise be set to within one-fourth of the minimum graduation on the beam.

The following table shows the calculated maximum errors of good commercial practice:

Size of package.	For net weighing.		For gross and tare weighing.	
	On single packages.	On the average of a representative sample.	On single packages.	On the average of a representative sample.
	Ounces.	*Ounces.*	*Ounces.*	*Ounces.*
2-ounce	0.150	0.097	.....	.....
3-ounce	.150	.097	.....	.....
4-ounce	.150	.097	.....	.....
8-ounce	.150	.097	.....	.....
1-pound	.213	.106	.....	.....
2-pound	.360	.145	.....	.....
3-pound	.363	.148	.....	.....
4-pound	.409	.194	.....	.....
5-pound	.409	.209	.....	.....
10-pound	.544	.373	0.674	0.414
25-pound	5.41	2.68	7.49	3.34
50-pound	5.41	2.68	7.73	3.57
75-pound	5.65	2.92	7.73	3.57
100-pound and above	5.65	2.92	8.29	4.13

Copies of this bulletin can be obtained free upon application to the United States Department of Agriculture, Washington, D. C.

SHOULD GUARD AGAINST FOOT-AND-MOUTH DISEASE

"The department is responsible for the protection of the live-stock industry against the introduction of nearly a score of serious foreign live-stock diseases," declares the Secretary of Agriculture in his annual report, just made public. "One of the most infectious and dangerous of these," he adds, "is foot-and-mouth disease, which exists nowhere in the United States at the present time, but is a constant menace because of the facility with which it may be carried by animals, hides, and various live-stock products.

"The importance of prompt action in eliminating any centers of infection whenever they develop emphasizes the necessity of providing an adequate 'insurance' fund, available for immediate use. Such a fund, to be used only in case of actual outbreaks, has been carried in the Agricultural appropriation act for several years. The appropriation was reduced by $950,000 at the last session of Congress, leaving an amount which is entirely inadequate to cope with serious outbreaks.

"While, through good fortune, no outbreak has thus far occurred during the current fiscal year, it would certainly be the part of wisdom to make liberal provision for dealing with this dangerous disease whenever it appears, and the department, therefore, has recommended in its estimates for the next fiscal year, 1921, that the appropriation be restored to its former figure."

WOULD AID AMERICAN FARMER COMPETE IN WORLD MARKETS

As a means for aiding the American farmer to compete in the markets of the world the Secretary of Agriculture in his annual report to the President, urged that definite provision be made for the systematic collection and dissemination of statistics regarding the production and supply of and the demand for agriculture products in foreign countries.

The Foreign Markets Division of the Bureau of Markets, he said, is keeping in as close touch as possible with conditions abroad, but it has neither the personnel nor the facilities for meeting the demands made upon it. "It is highly essential that definite provision be made for the building up of this branch of the department's work, in order that it may be in position to render effective service to producers, farm organizations, and others," he said. "Since May, 1918, an agricultural trade commissioner has been stationed in the United Kingdom to study the markets for agricultural products in Europe and to make timely reports for the information of American producers and exporters. The work of this commissioner has conclusively demonstrated the desirability of stationing additional commissioners at strategic points in the various markets of the world. Plans also have been developed for the establishment of an office in Buenos Aires to aid in promoting our trade with South America in purebred live stock," said the report.

World War Proved Need for National Independence in Fertilizer Production

The European war emphasized the fact that no effort should be spared to establish national independence in the production of fertilizer materials, the Secretary of Agriculture points out in his annual report to the President. "This is especially true," he says, "in the case of nitrogen, which is not only a valuable fertilizer ingredient, but also an essential element in the manufacture of munitions. Of all the nations involved in the war, Germany alone had a sufficient nitrate supply within her borders, but England, France, and Italy are now rapidly perfecting plans to make themselves equally secure in this respect. Increased interest has been manifested in this country, also, in the study of methods for fixing atmospheric nitrogen, and the Department of Agriculture, through the Bureau of Soils, has actively cooperated with the War Department in this important field. The production of ammonium sulphate from by-product coke ovens and gas plants has greatly increased, but not sufficiently to meet the demand for fixed nitrogen.

Offered a Possibility.

"The completion, shortly before the armistice, of the nitrogen fixation plant at Muscle Shoals, Ala., offered a hope for an independent source of nitrogen for fertilizer use in time of peace. This plant is prepared to make calcium cyanamid or, by some additions, to manufacture ammonium sulphate. With modifications, also, it may be equipped for the preparation of highly concentrated fertilizer materials which will be free from filler, and therefore result in a considerable saving in freight charges. The plant is still idle, awaiting the necessary authority from Congress for its operation. It is hoped that the matter will receive consideration at the next session of Congress, and that the requisite authorization will be granted without further delay, in order that the Nation may escape once for all from its dependence upon foreign nitrate fields, and that an adequate supply of nitrogen may be developed, both as a protection in times of national stress and to meet the growing demand for this valuable product for fertilizer purposes.

"The experimental kelp plant at Summerland, Calif., the purpose of which is to demonstrate the practicability of extracting potash and useful by-products from the giant kelps, is in active operation and valuable results are being secured.

"Unquestionably it will be possible when the best methods have been worked out to develop a potash industry on the Pacific coast capable of supplying a considerable part of the Nation's need.

Two Processes Developed.

"Two processes for the recovery of potash from certain rocks have recently been developed by the Bureau of Soils, and both are being utilized in commercial practice. The 87,000 tons of potash annually lost from flues and stacks of cement plants are still, in the main, going to waste. Only about 1 per cent was recovered in 1919. A similar situation exists with reference to the collection of potash from blast furnaces. The department is now making a survey of this situation and preliminary results show that the dust from blast furnaces is higher in potash content than the cement dust and that it can probably be recovered more economically. The potash that escapes from these two sources would, if collected in marketable form, go a long way toward meeting the normal potash requirements of the country. There is ample justification, therefore, for the appropriation of sufficient funds adequately to study those phases of the problem which properly come within the scope of this department's activities."

HEADING BEECH TREES LOW.

If beech trees are headed low there will be less opportunity for lovers and jackknife vandals to mutilate the bark with crude art, the United States Department of Agriculture suggests. Beeches and birches suffer most by the aimless jackknife. If landowners realized that this objection could be overcome easily by training the limbs low, the trees would be greater favorities.

FARM BUSINESS ANALYSIS BEING MADE IN MANY AREAS

In order to put at the disposal of farmers information which will enable them to place their farming operations on a more businesslike basis, the United States Department of Agriculture has conducted extensive studies in farm business analysis. During the last year 400 records were obtained in farm business analysis surveys on two general crop and live-stock areas in Iowa, 300 on a fruit and truck area in Florida, 136 on a general farming area in New Hampshire, 50 on a similar area in Ohio, 100 on a fruit district in Virginia, and 100 on a cooperative tractor and farm organization study in two areas in Ohio. Several of these surveys have been in progress for a number of years.

Similar studies on specialized types of farming are being made in cooperation with State agricultural colleges. In Kentucky the tobacco crop on 75 farms in each of two areas has been intensively studied, with a complete farm survey record taken on many of the farms at the end of the year. In New Jersey about 160 enterprise survey records were obtained on tomato and potato farming.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended December 18, 1920:

The Brown-Spot of Corn with Suggestions for its Control. Farmers' Bulletin 1124.

Farm Slaughtering and Use of Lamb and Mutton. Farmers' Bulletin 1172.

Care and Improvement of the Farm Woods. Farmers' Bulletin 1177.

Gipsy Moth Tree-Banding Material: How to Make, Use, and Apply it. Department Bulletin No. 899.

Grapevine Looper. Department Bulletin No. 900.

Grapevine Flea-Beetles. Department Bulletin No. 901.

Experience of Eastern Farmers with Motor Trucks. Department Bulletin No. 910.

The Red-Banded Leaf-Roller (Professional Paper). Department Bulletin No. 914.

Unit Requirements for Producing Milk in Western Washington. Department Bulletin No. 919.

Maintenance of the Fur Supply. Department Circular 135.

Tuberculosis Eradication Under the Accredited-Herd Plan. Supplement 1 to Herd List No. 3. Department Circular 143.

Standards of Purity for Food Products. Office of the Secretary Circular 136.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1124; Department Bulletin No. 899; Department Circular 135.

Prepare for Next Summer's Ice Supply—A Necessity and Luxury on Dairy Farm

Customer: "This milk is sour."

Milk inspector: "Your bacteria count is too high."

Cheesemaker: "I can't make good cheese out of this milk."

Butter maker: "We can't use this cream."

Hurts, doesn't it? Yet that is what happens regularly every year when can after can of milk arrives at the milk plant or creamery sour. One creamery returned over $2,000 worth of milk and cream in one year to farmers. A milk plant received nearly 50,000 gallons of sour milk in one year.

Why? Because the milk was held and shipped at too high a temperature, and the bacteria in it multiplied so rapidly that the milk soured before it arrived.

Cooling milk on the farm will reduce this loss. All that is required is a supply of ice and a little care. Natural ice can be harvested on farms where 85 per cent of our milk is produced, and it is one of the real paying crops of the farm. Few tools are required, and for the average farm two saws, two pairs of tongs, two ice hooks, one pointed bar, and one straight board for marking should be sufficient.

When to Store Ice.

The first thing to do is to provide a place to store the ice. If ice is scarce and hard to put up, it would probably be well to build an ice house, plans for which may be obtained from the Dairy Division, United States Department of Agriculture. When ice is abundant and easily harvested, it may be cheaper to disregard the shrinkage factor and store it in a pit, cellar, shed, or other place, and insulate it with sawdust or shavings. If this is done, 20 to 50 per cent additional ice should be provided to allow for shrinkage.

Where cream only is to be cooled, allow at least one-half ton of ice per cow. For cooling milk, allow 1½ tons per cow. These quantities should be enough to leave a margin for household use; but it is better to have too much than too little. Whenever practicable, build the ice house in the form of a cube, allowing 45 cubic feet of space for each ton of ice.

Marking and Cutting Ice.

The pond or stream selected for cutting ice should, of course, be free from dirt or contamination from barnyards, privies, or refuse heaps. The ice should be kept clear of snow, as snow retards freezing. When it has frozen to a sufficient depth, mark off the surface into cakes of the desired size, making sure that the lines form rectangles. Cut out a strip of ice (with the saw) the width of the cake desired, and force this strip under the ice, thus forming a channel to the landing and loading place. Large strips may then be sawed off and floated to the landing, where they may be cut up into cakes. These cakes are then hauled to the storage place and packed in as close together as possible, and all cracks and air spaces filled in with sawdust. Cakes that are cut squarely and are uniform in size and shape pack together with less air space and are convenient to handle.

The cost of ice is small, and the work generally comes during a slack season. There is little reason, therefore, why every farmer in the natural-ice section should not have ice with which to cool his dairy products, and to make such delicacies as ice cream, iced tea, iced buttermilk, iced fruit and vegetables, etc., possible on the farm.

Detailed information on harvesting and storing ice will be found in Farmers' Bulletin 1078, "Harvesting and Storing Ice on the Farm," which may be obtained on request from the United States Department of Agriculture, Washington, D. C.

NATIONAL FOREST RECEIPTS INCREASE DESPITE FIRE LOSS

(Continued from page 1)

Ozark Mountains of Arkansas. The original program of acquisition contemplated the purchase of about 1,000,000 acres in the White Mountains and not less than 5,000,000 acres in the Southern Appalachians, the report states. Nearly one-half the proposed White Mountain area has been acquired, but slower progress has been made in the southern areas.

Further appropriations to carry on the purchase work within the areas have been recommended by the National Forest Reservation Commission. "To leave these eastern forests in their present half-finished condition would subject them to formidable fire hazards and other difficulties of management," the Commission stated.

There is need also for some action to reduce the danger to the national forests from the 24,267,723 acres of private lands that are intermingled with land belonging to the Government. Most of this land is forested, and its misuse, mismanagement, and neglect jeopardizes the Government's holdings. General legislation to acquire the private land by purchase or exchange is urgently needed, it is pointed out.

The 1919 fire season was unusually severe and long drawn out, the report states. It was the third successive year of severe drought in the Northwest and the worst of the three. Fires began to occur before much of the customary work of preparation had been done, and this imposed a further handicap upon the forest force, which had been depleted by the loss of many experienced men. The total number of forest fires in the national forests was 6,800, or 1,227 greater than in the previous year. The area of national forest lands burned over was 2,000,034 acres, the estimated damage was $4,919,769, and the total cost of fire fighting (exclusive of the time of forest officers) was $3,039,615.

In the season of 1920 an acutely hazardous fire situation developed by the middle of July and reached its peak about August 1, when dry electrical storms ignited an extraordinary number of fires. Fortunately, the report states, the fall rains set in before the end of August, so the acute period was relatively short. Expenditures for fire fighting were approximately $800,000, and it will be necessary to seek a deficiency appropriation from Congress to cover the amount in excess of $250,000, the regular appropriation for the purpose.

DANGER OF MAKING STUDY OF AVERAGE COST FIGURES

The fact that there is a wide variation on individual farms in the cost of producing any product has been substantiated by recent cost surveys conducted by specialists of the United States Department of Agriculture. Because of this variation, the specialists point out, it is a fallacy to consider the average as representing the cost of production. For example, the average cost of wheat per bushel on the 481 farms studied by the specialists last year was $2.51, but more than 50 per cent of the farmers concerned produced wheat at a cost above this figure, ranging up to an extreme of $8.20 per bushel. Similarly, the average cost of cotton for the 842 farms studied was approximately 23 cents per pound, yet almost 60 per cent of the growers had costs above this average.

The department now gives the results of cost studies in the form of frequency tables in order to show the proportion of a product that is produced at or below a given cost and to call attention to the importance of a bulk-line cost rather than average cost in relation to price.

Aims to Improve Breeds of Live Stock—Campaign Producing Excellent Results

"The breeding and development of improved types of animals offers possibilities at least equal to those involved in the breeding and selection of better crop plants," says the Secretary of Agriculture in his annual report to the President. "The campaign now under way for 'Better Sires—Better Stock' is producing excellent results. Its purpose is to bring about the elimination of scrub stock from our herds, thus increasing their producing capacity. It costs as much to raise a poor animal as it does a good one, and more to keep it, so that better live stock makes for increased production and greater profits. The improvement which can be made in a herd with a purebred male is startling. If a purebred sire is kept throughout, the first generation would be one-half pure blood, the second three-fourths, the third seven-eighths, the fourth fifteen-sixteenths, and the fifth thirty-one thirty-seconds, or practically purebred.

A Concrete Example.

"A concrete example of the importance of quality may readily be estimated from the slaughter records of animals. In converting cattle into beef, for example, the present average dressing percentage is 53½. Poor breeding, without doubt, is a prime cause of this low percentage. Suppose our efforts to improve cattle should, within a reasonable time, raise the general dressing average only 1½ per cent—that is, to 55 per cent—what would be the resulting increase in beef? On the basis of a total annual production of 7,000,000,000 pounds, which is the average dressed-beef production for the last two years, the increase would be 200,000,000 pounds a year. This is far from being a negligible quantity; in fact, it just equals our average annual exports of beef products for the last 10 years, including, of course, the war period.

Earn More Than Lambs.

"Purebred or grade dairy cows frequently earn for their owners from 25 to 100 per cent more than the returns received from scrubs. In a typical case, heifers sired by purebred bulls surpassed their dams, which were ordinary cows, by 64 per cent in milk production and 52 per cent in butter fat. The second generation produced more than twice as much butter fat and milk as the original animals. The United States holds sixth place among 14 prominent countries in the average yield of milk per dairy cow, being excelled by The Netherlands, Switzerland, Denmark, Germany, and Canada. Our ability to produce scores of cows which yield more than 20,000 pounds of milk a year is ample proof that our national production of less than 4,000 pounds per year per animal is, in the last analysis, a reflection of inattention and average lack of applied skill. The dairy cow is a good example—probably the best—because her production is so readily measured and because there is so much uniform evidence in various countries. But the same principle and similar facts apply with equal force to horses, hogs, sheep, poultry, and other farm animals.

"The experimental and other work of the department, having for its purpose the development and improvement of our live stock, covers a wide range, including dairy farming, hog raising, horse breeding, beef production, sheep raising, poultry production, methods of feeding under regional conditions, and the general principles of breeding and heredity. This work is of fundamental importance and should be further developed."

SIMPLE METHOD FOR TELLING BIRCH, BEECH, AND MAPLE

Birch, beech, and maple wood are very similar in appearance, and have approximately the same weight. It is comparatively easy, therefore, to mistake one for another. A method for distinguishing them, based upon the relative width of the pores and medullary rays in the three woods, is suggested by the Forest Products Laboratory, United States Department of Agriculture.

If the end grain of birch, beech, or maple is cut smooth with a sharp knife and examined with a hand lens, the pores will be seen as tiny holes distributed fairly evenly over the surface, and the medullary rays will appear as narrow lines of a different shade running at right angles to the growth rings.

In beech some of the rays are very distinct, even without a lens. The large rays are fully twice as wide as the largest pores.

In maple the rays are less distinct, and the largest are about the same width as the largest pores.

In birch the rays are very fine, invisible without a lens. The pores are several times larger than the rays, usually being visible to the unaided eye as minute holes on the end grain and as fine grooves on dressed faces of the board. The pores in birch are considerably larger than the pores in beech or maple.

The appearance of the medullary rays on a "quartered" surface is also distinctive. Here they appear in beech as distinct "flakes," the largest being between one-sixteenth and one-eighth inch in height when measured along the grain of the wood. In maple they are considerably smaller, rarely attaining a height of one-sixteenth inch. In birch they are comparatively inconspicuous.

BULLETIN INFORMATION AIDS BACK-YARD POULTRY SUCCESS

One hen, a brood of 12 chickens, and a few Farmers' Bulletins on poultry raising were the foundation on which Mrs. M. Lohrberg, a resident of the District of Columbia, began her poultry operations in the spring of 1919. During the first 11 months of 1920 her flock of 8 birds—the hen and 7 pullets—laid 1,059 eggs, an average of about 132. During the same period she hatched from 3 settings of eggs 30 chickens, of which she raised 26.

This noteworthy success with poultry came to the attention of the United States Department of Agriculture recently, when Mrs. Lohrberg called for an additional supply of Farmers' Bulletins, explaining that owing to her success her neighbors had borrowed the bulletins which she had formerly obtained.

"I never kept any chickens before," she said, "and knew nothing about poultry raising until I got the first brood and also the bulletins."

Her chickens are Rhode Island Reds from good stock, and a standard-bred rooster is used. The flock is kept entirely under back-yard conditions in a space 30 by 50 feet, and the feed, costing about $1 a week, is supplemented by table scraps. Based on retail prices, the estimated value of the 88 dozen eggs laid by this back-yard flock was about $62, but none were sold. A fondness for fresh eggs prompted the family to keep every one for family use. In addition, fried chicken and roast fowl graced the table frequently.

Acting on suggestions in Department of Agriculture literature, she is planning to "put down" in water-glass solution a good supply of eggs next season. Her poultry house is small, but scrupulous care in cleaning it out every day, combined with close personal attention to good feeding is responsible, she believes, for the absence of poultry diseases and ailments.

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TO ENLIST PUBLIC SENTIMENT IN CONTROL OF FOREST FIRES

Organized Control Could Be Secured at Maximum Cost of 8 Cents Per Acre.

Investigation Shows 75 Per Cent of All Fires Occur in Two Groups of States That Are Weakest in Organization.

What can the individual do toward preventing forest fires?

Accompanying many copies of this issue of the NEWS LETTER is a franked envelope addressed to The Forester, Forest Service, United States Department of Agriculture, Washington, D. C., each containing a question sheet relative to forest fires and the personal and local attitude as to measures for preventing them.

Briefly, the Forest Service wishes to sound the sentiment of the country along these lines:

Is it worth 8 cents an acre a year to protect the forests of the United States from fire?

Is it worth 1 cent an acre?

Is it worth $5,000,000 a year to prevent a national loss which has amounted to that figure in one small portion of the country?

Is it desirable that the Federal Government establish organized measures to save the forests?

Surveys made by the Forest Service indicate that organized forest protection on a scale thorough enough to prevent serious loss could be accomplished for about the figures named, the cost per acre varying according to local conditions. The total expense would be about 5 cents a year for each inhabitant. Under present laws, the Federal forest officials can undertake preventive measures only where the work has been initiated by the individual States.

Fires Frequent in Unorganized Areas.

Studies which have been made show that during the last four years an average of 33,000 large and small forest fires have occurred annually in the United States. More than one-third of these have been in the southeastern group, consisting of the seven States on the Atlantic seaboard from South Carolina around to Mississippi. This territory, with the exception of some beginnings in North Carolina, is practically unorganized for forest-fire protection. The Pacific group stands second in the number of forest fires over the four-year period. This is in the face of organized fire-fighting measures. Next in their order as to the number of fires are the "west Mississippi" group, largely unorganized; the hardwood division of the "northeastern" group, which is fully organized; the "Appalachian" group, partially organized; and the northern division of the "Rocky Mountain" group, which is fully and exceptionally well organized. A study of the relative average number of fires for each of these groups for the four-year period indicates that in 1919 organized fire-preventive measures had been successful enough to justify the labor and expense.

More than 75 per cent of all the fires are shown to have occurred in the "southeastern" and "west Mississippi" groups, both of which are poorly organized for fire protection. Figures for the "east Mississippi" group, where a seemingly good showing is made, are incomplete, as it has been impossible in the past to get anything like complete reports of forest fires that occurred.

The poor showing of the "Lake States" group, which is partially but still inadequately organized, is due to a disastrous fire of only two days' duration in a portion of one State, in the fall of 1918, when losses on improved property alone exceeded those throughout the entire remainder of the Nation.

Similarly the statistics on the causes of forest fires show striking evidence of the absence of forest-fire organization.

(Continued on page 8.)

COW-TEST ASSOCIATIONS INCREASE.

Cow-testing associations in the United States numbered 467 on June 30, 1920, according to a report just issued by the United States Department of Agriculture. This number represents a gain of 54 over the corresponding date of 1919. Bull associations increased during the same period from 78 to 120.

GOVERNMENT FIGHTING HARD TO REDUCE FARMING HAZARDS

War Being Waged on Pests Which Bar Agricultural Prosperity.

Progress Being Made, But Efforts Must Be Increased More Than Ever Before If Nation Is to Be Fed, Declares Secretary Meredith in Report to President.

"Farming would be one of the safest means of gaining a livelihood and obtaining prosperity if it were not for the hazards of production—plant and animal diseases, insect pests, predatory animals, rodents, etc.," says the Secretary of Agriculture in his annual report to the President. The United States Department of Agriculture is now at work, as it has been for many years, in developing ways and means of reducing or even eliminating the hazards. "Notwithstanding what has been done," he adds, "if the increasing population of the Nation is to be fed from the available farm lands in the United States, the efforts along this line must be prosecuted more vigorously in the future than ever before, and the fundamental research work which constitutes the basis of these efforts must have proper appreciation and support.

Disease Takes Huge Toll.

"The toll exacted by plant diseases is appalling. It is estimated by the department that in 1919 field diseases were responsible for the loss of approximately 190,000,000 bushels of wheat, of 78,000,000 bushels of oats, of 200,000,000 bushels of corn, of 86,000,000 bushels of potatoes, of 58,000,000 bushels of sweet potatoes, of 18,000,000 bushels of apples, and of 1,742,000 bales of cotton. The cost of producing diseased and healthy crops up to the time of harvest is practically the same, so it is clear that plant diseases are a grievous and dangerous overload on our agriculture.

"One of the most significant activities which the department now has under way is the effort to reduce the tremendous losses from wheat rust, aggregating in some years as much as 200,000,000

bushels. Scientific investigation has proved that the fungus which is responsible for the disease gets its start in the spring on the common barberry plant, and a vigorous campaign, therefore, is being conducted, in cooperation with the various States, to eliminate such plants.

4,600,000 Sources Found.

More than 4,600,000 barberry bushes have been located, and of these 3,500,000 or more have been destroyed. Progress also has been made in devolving a method for controlling wheat scab, which caused in 1919 a loss of nearly 60,000,000 bushels of wheat; a convenient method of testing seed corn for germination and of eliminating disease infection before planting has been devised; and much has been accomplished in working out practical control measures for other injurious plant diseases."

The report also discusses what the department is doing to reduce the losses from animal diseases, insects, predatory animals, and rodents.

MOVIE REVEALS BOLL WEEVIL AS VILLAIN OF COTTON FIELD

"Good-by, Boll Weevil," is the title of an entertaining and instructive two-reel film just released by the United States Department of Agriculture. Mr. Boll Weevil, destroyer of American crops to the extent of many million dollars a year, is the "heavy" villain. He appears several times individually in the course of this lively production, but the principal part is devoted to the activities of the hero of the sketch, Mr. Calcium Arsenate, who is aided and abetted by the department in his efforts to bring about Mr. Weevil's overthrow. "Cal" descends upon Mr. Weevil from a battery of horse-drawn machines, of which 40 are shown in one spectacular scene taken in early summer. Work is shown in the department's laboratories at Tullulah, La., and in Washington, D. C., where the methods which save cotton planters $20,000,000 or more annually were devised.

One interesting feature is the laboratory work by which bogus weevil exterminators are detected. The second part of the film, taken in the fall, shows thousands of acres of snowy cotton fields with colored pickers gathering the snowy bolls. Two or three contrasts are shown between fields where calcium arsenate dust has been applied and adjoining rows which were neglected. From actual experience the saving to one 5,000-acre planter is given at more than $64 an acre. The film is designed primarily for demonstration work in the South, and is one of about 500 films covering more than 100 subjects showing different phases of the work of the department. Copies of the film may be bought from the department by institutions and organizations interested in boll weevil extermination. Its use is suggested for State agricultural colleges, boards of commerce, etc.

Nation-Wide Practice of Forestry Urged—Depletion Said to Have Become Critical

Combined Federal and State action looking to the arrest of forest destruction and the restocking with new growth of timberlands as they are cut over is urged by the Secretary of Agriculture in his annual report to the President.

Forest depletion in the United States, he says, has reached a dangerous and critical point, and the time has come for the Federal Government, the States, and private owners of timberlands to join in perpetuating our forests and thus to insure an adequate supply of timber for our future needs.

"As cutting advances," says the report, "much of the land which should continue to produce ample quantities of timber for our domestic needs and also a balance for export, either grows inferior or partial crops, or sinks to a condition of virtual waste. The cause is neglect and should be removed. It can be removed only by public action.

A National Question.

"The broad question of timber supplies and permanent forests is a national one. It can not be handled piecemeal by uncorrelated local agencies. Neither can it be handled through an inflexible system imposed without regard to local conditions. The recognized police powers of the several States should be brought into play to stop forest fires and prevent the devastation of privately owned forest land. At the same time, the Federal Government should take an active part in aiding the forest activities of the States in standardizing technical requirements as between the States and extending the national forests. But the public should not be expected to bear the entire burden. Responsibility rests upon the forest owner to comply with equitable requirements designed to keep employed in growing timberlands which are not needed for agriculture."

Adequate appropriations will be requested of Congress, the Secretary says, to permit cooperation with all States in preventing and controlling forest fires and putting a stop to other causes of devastation. The States will be expected to enact laws providing effective systems of fire protection and requiring private owners to adopt such measures to prevent undue fire hazard or the conversion of productive into devastated land as local conditions make necessary. Funds will also be asked for the reforestation of devastated lands within the national forests and for increasing the forests by land purchases or exchange of national forest lands or timber for private lands of equal value.

NEW COLORADO VACATION LAND TO BE OPENED TO SPORTSMEN

American sportsmen are forming an organization which will make accessible to the public the famous Conejos Lakes region of the Rio Grande National Forest, Colorado, according to information received by the United States Department of Agriculture. This area, with its wonderful scenic beauty, its primeval forests, its trout streams, lies in the southern part of the State near the New Mexico line, a day's journey by train from Denver. Many square miles of beautiful forests and more than 100 lakes are included in its boundaries. Few places are more richly endowed by nature, or offer greater recreational advantages.

The new association plans to keep the tract unspoiled, but will erect rustic log cabins and chalets to accommodate those who desire a vacation "off the beaten paths." The plan is to cooperate with the United States Forest Service and the State fish and game commission in preserving the natural beauty of the forest, and its fish, animal, and bird life.

PLANT CHESTNUT TREES.

Fifteen years ago an Illinois farmer selected a piece of steep hillside land, unsuitable for regular cultivation, and set out a grove of young chestnut trees. The trees are now giving him as good an income as some farming land, and practically without attention. Chestnut blight, which has destroyed most of the native chestnut trees in the East, has not yet done material damage to chestnut land plantings west of the natural distribution of the American chestnut. Blight resistant varieties are now being developed by the United States Department of Agriculture and by associations of nut growers.

Tabulation No. 3 Shows Many Additions to Government's Accredited-Herd List

Accredited-herd list No. 3, recently issued by the United States Department of Agriculture, is the official record of progress in tuberculosis eradication under the accredited-herd plan. So extensive has the work become that the list of accredited herds, together with summaries, requires 52 printed pages. And this does not include herds which have passed one official tuberculin test with a view to being accredited. Such herds are listed in two supplements to the main list. Supplement 1, containing 98 pages, lists herds of the Ayrshire, Guernsey, Holstein-Friesian, and Jersey breeds. Supplement 2, containing 50 pages, includes once-tested herds of the Aberdeen-Angus, Brown Swiss, Devon, Dutch Belted, Galloway, Hereford, Red Polled, and Shorthorn breeds.

Tested Herds Increase Threefold.

Altogether, the number of accredited and once-tested herds is approximately three times as large as recorded in Herd List No. 2, issued last year.

Accredited-herd List No. 3 is ready for distribution, and may be obtained on request from the Bureau of Animal Industry, United States Department of Agriculture. The two supplements were ready for distribution after December 15. Persons desiring either or both of the supplements may apply to the bureau.

Arranged according to number of accredited herds, the various States cooperating with the Federal Bureau of Animal Industry in bovine-tuberculosis eradication are shown up to June 30 in the accompanying table:

State.	Accredited herds.	Once-tested free herds.
1. Minnesota	494	994
2. Virginia	354	591
3. Wisconsin	287	835
4. Pennsylvania	261	639
5. District of Columbia	190	94
6. North Dakota	172	936
7. Maine	127	941
8. Indiana	121	392
9. North Carolina	105	1,045
10. Ohio	104	714
11. Maryland	103	261
12. Michigan	103	133
13. Tennessee	86	292
14. Kansas	80	81
15. Illinois	70	293
16. Vermont	63	1,343
17. Mississippi	59	288
18. Kentucky	55	270
19. Montana	48	97
20. New York	47	189
21. Iowa	44	377
22. Utah	36	377
23. South Carolina	34	153
24. Alabama	34	79
25. Oregon	30	263
26. West Virginia	29	763
27. Nebraska	29	205
28. Louisiana	28	153
29. New Jersey	28	21
30. Florida	21	1,295
31. Massachusetts	21	34
32. Connecticut	18	58
33. Washington	16	294
34. South Dakota	15	124
35. Arkansas	14	53
36. Delaware	10	45
37. Idaho	8	526
38. Georgia	8	180
39. New Hampshire	7	30
40. Missouri	6	585
41. Rhode Island	5	10
42. Nevada	1	297
43. Oklahoma	1	228
44. Texas	.....	51
45. Colorado	.....	2
46. Wyoming	.....	1
Total	3,370	16,599

DEFINITE LABELING URGED FOR FRUIT PREPARATIONS

How to label jams, jellies, preserves, and marmalades in order that purchasers may obtain the particular variety they desire to buy is outlined in a statement issued by the officials of the Bureau of Chemistry, United States Department of Agriculture, in connection with the enforcement of the Federal Food and Drugs Act.

The joint committee on definitions and standards for food products has not yet issued standards for jams, jellies, preserves, and marmalades, although the question of definition and standards for these products is now under consideration. The following statement has been issued by the Bureau of Chemistry for the guidance of manufacturers pending the issuance of definitions and standards:

"Investigations of the Bureau of Chemistry have shown that the commercial methods of preparing preserves, jams, marmalades, and fruit jellies have been undergoing changes in recent years, so that at the present time these foods, as they are shipped in interstate commerce, are prepared from a greater variety of materials than was formerly the case. Fresh fruit, preserved, canned, and dried fruit are all being used. In some types the fruit is ripe and in others unripe. Sugar and corn sirup are used as sweeteners of preserves, and it is expected that malt sugar sirup and other wholesome sirups will be used during the coming season. Some products are acidulated by the use of phosphoric, lactic, or tartaric acid. Due to the different kinds of materials that are used, the products of different manufacturers, and sometimes different brands of the same manufacturer, may differ in the important characteristic of flavor and consistency. The bureau considers that the purchasers should be afforded means by which they can distinguish the particular variety of preserves, jam, marmalade, or fruit jelly which suits their taste, and, therefore, deems it desirable that information concerning the nature of the ingredients which give the food its character should be stated upon the label."

ONE OUNCE OF STRYCHNINE KILLS A THOUSAND RABBITS

A good lively machine gun is harmless when compared to strychnine—at least, when it is used to exterminate rabbits. In Lincoln County, Idaho, the farmers, working in cooperation with the Bureau of Biological Survey, United States Department of Agriculture, report that 1 ounce of the poison killed 400 rabbits. Farmers in Gooding County did even better with their poison and averaged 1,000 rabbits to the ounce. Minidoka County, conducting a poison campaign under the direction of the bureau, killed 40,000 rabbits.

These figures are illustrative of the work that has been done under Government direction in exterminating rabbits in the Western States, where they are so plentiful as to be extremely destructive to orchards and crops. Large-scale campaigns were organized in Idaho, Oregon, Washington, Nevada, Utah, and Arizona under the leadership of Department of Agriculture representatives and along cooperative lines in which the State governments, the State extension services, and the landowners assumed a share of the responsibility. In addition to the poisoning methods, great rabbit drives were conducted, some of which resulted in the killing of as many as 10,000 rabbits.

The representatives of the Bureau of Biological Survey emphasize the fact that, in the West, the rabbit is a serious menace. Rabbits often devastate large fields of grain and destroy valuable orchards and vineyards. There are instances where orchards, representing the work and savings of a lifetime, and which constituted the sole support of the owner, have been completely destroyed in a single night by jack rabbits.

Many farming communities in the United States have built community houses within the last decade. A first-hand investigation of 250 of these community buildings has been completed by the United States Department of Agriculture during the last year.

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John L. Cobbs, Jr., Chief

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Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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ENTIRE FARM AREAS FREED FROM BOVINE TUBERCULOSIS

A noteworthy development in bovine-tuberculosis eradication is the tendency to free from that disease areas containing many farms. The annual report of the Bureau of Animal Industry, United States Department of Agriculture, just issued, lists the following regions, which made tuberculin tests of all cattle within their boundaries during the last fiscal year: Clay County, Miss.; Island County, Wash.; Clatsop County, Oreg.; and the District of Columbia. Department officials believe that eradication of tuberculosis will proceed more rapidly, even than in the past, when it is taken up on the area basis.

PRICE OF LAND TOO HIGH TO BE GOOD FARMING INVESTMENT

As a result of the phenomenal advance in Iowa land values during the spring and summer of 1919, the United States Department of Agriculture, in cooperation with the Iowa State College of Agriculture, made an investigation, which shows that the prices at which farm land was sold in many sections of that State were too high to justify the returns which can be made from it. It was found that the average value of Iowa farm lands increased $121 per acre in the five years from 1915 to 1920, and that $63 of this increase occurred between March, 1919, and March, 1920, the twelfth month including the period of the boom. Over 65 per cent of the buyers and over 56 per cent of the sellers were farmers, while, contrary to general belief perhaps, less than 7 per cent of the buyers and but a little over 11 per cent of the sellers were real estate men. The facts relative to the per cent of return on investment in these lands which were brought out make it clear that they are valued in excess of their earning capacity. The investigators point out that with land paying but 3 per cent on capitalization, and loans running at 6 per cent or more, buying a farm on a large margin of credit is a difficult undertaking for the farmer of average ability as a manager.

WRAPPING APPLES IN OILED PAPER CUTS DOWN SCALD LOSS

Wrapping apples in oiled paper has been found to prevent apple scald, a cause of heavy loss during storage and transportation. As a result of investigations by the United States Department of Agriculture, a great many of the fancy packed apples are likely to go out next year in oiled instead of plain wrappers.

Scald, department specialists have discovered, is caused by gases given off by the apples themselves. The gases contribute to the flavor of the apple and recently were segregated and identified by department chemists, who even went so far as to build up a synthetic apple odor from chemicals obtained from outside sources. Pending practical use of this discovery, which is attracting scientific attention both here and abroad, the specialists of the Bureau of Plant Industry have applied the distilled chemicals to apples and checked up on their theory as to the cause of scald.

Scald, it has been found, can be entirely prevented by storing apples in oiled (not waxed) wrappers. A good quality of oiled wrapper can be prepared by hand, but the cost of labor is too great. The oiled paper on the market in 1920 had been prepared for other purposes and was too heavy for convenient use, but manufacturers are now preparing lighter weight oiled papers for the 1921 crop.

Ventilation has also been proven to be a remedy for apple scald, but it has been found extremely difficult to secure under commercial cold-storage conditions.

SAVAGE BEASTS EXACT HUGE TOLL IN ANIMAL SLAUGHTER

Compared with some individual members of the mountain lion, wolf, and coyote families, Gulliver's hungry giants and giantesses were light and dainty eaters. All these animals are classed as predatory, but a few specimens develop exceptional skill and cunning in killing cattle, sheep, and colts. They usually acquire equal skill in avoiding traps, poison baits, and rifle fire, and often do thousands of dollars' worth of damage before they are killed.

The Bureau of Biological Survey, United States Department of Agriculture, keeps a staff of expert hunters in the field for the express purpose of ridding Government range lands of these four-footed outlaws, and thus assist in relieving the rancher. A Government hunter killed a mountain lion near Roosevelt, Ariz., that had destroyed 50 calves and 3 colts on a single ranch. One wolf slain by another hunter in New Mexico had killed 23 calves. Another, in Wyoming, slaughtered 30 head of cattle before one of Uncle Sam's hunters shot the criminal. A pair of Wyoming wolves that had learned exceptional cunning and cruelty ran a yearly board bill amounting to about $3,500. Their meal tickets were canceled by a couple of well-aimed rifle shots by a Government hunter. Two other wolves, which showed gustatory preference for mutton and young horse flesh, in a single month killed 150 sheep and 7 colts, but at the end of the month a hunter collected their pelts.

REPORTS MANY VIOLATIONS OF VARIOUS FEDERAL LAWS

During the last fiscal year 6,008 violations of statutes intrusted to the United States Department of Agriculture for enforcement were reported by the Solicitor's office; 4,446 of them to the Attorney General, and 1,562 to the Director General of Railroads, pursuant to an agreement. The latter covered violations of the animal quarantine laws and the 28-hour law, occurring during the time the Government held control of the railroads.

The number of cases considered in the various classes of violations, with the fines collected, were: 28-hour law, 3,123, $109,850; Food and Drugs Act, 1,588, $18,160; laws for protection of national forests, 397, $74,379.30; Migratory Bird Treaty Act, 296, $2,230; Animal Quarantine acts, 179, $27,000; Insecticide Act, 134 criminal, $2,342; 20 seizures; Lacey Act, 26, $1,917; Meat Inspection, 26, $1,306; Bird Reservation Trespass law, 6, $315.

Recoveries by the Government, during the last fiscal year, for trespasses on the national forests amounted to $87,082 in damages and $3,225 in fines. These included grazing, timber, fire, game, and occupancy.

Normal Grazing in Forests Credited With Reduction in Number of Fires

Data gathered by the Forest Service of the United States Department of Agriculture on seven typical Western national forests showed that grazing reduced the number of fires in a specified year by from 50 to 75 per cent, while on an eastern Oregon forest in another year the average area covered by each fire on non-grazed lands was 273 acres, and on normally grazed lands only 15.7 acres.

Other favorable effects of grazing mentioned are the breaking down and wearing out of débris, such as fallen branches and logs, in which sheep are most efficacious, and the formation of stock trails and driveways that can be used as fire lines and fire breaks. A Washington forest reports that stock driveways served as at least a 50 per cent check on the spread of fire.

How to use live-stock grazing on the national forests as an aid in keeping down losses from fires is being carefully studied by the Forest Service. That cattle and sheep under some conditions may materially reduce the fire hazard is an accepted principle in forest protection. On the other hand, if the grazing is not judiciously handled serious damage to forest growth is likely to result, and in many types of forests grazing has no protective value, even though regulated with the greatest care.

In Department Circular 134 many interesting facts gathered in investigations that have been going on for a number of years are set forth. It is pointed out that to make grazing a benefit instead of a drawback it must be scientifically managed. Injury to forest growth, to soil and water conditions, and to the range must all be guarded against. Forest ranges that are overgrazed will be injured in at least one of these ways, and are very likely to be injured in all of them.

The chief benefit of grazing as a means of reducing the fire hazard comes from removal of the forage crop which otherwise, when dry, would spread fires and might easily become a starting point for them. The facts have shown, however, that different localities present different conditions and require different treatment to utilize grazing properly as a protective agency, and that the same results can not be obtained in all places.

While grazing introduces a certain fire hazard by taking large numbers of persons into the forests to care for the stock, it is pointed out that stockmen and herders are now generally carefully and indeed keenly interested in preventing fires, and often give invaluable help in fire fighting.

PROF. C. J. TILDEN APPOINTED HIGHWAY EDUCATION DIRECTOR

C. J. Tilden, professor of engineering mechanics at Yale University, has been granted leave of absence for a year to accept the position of director of the highway and highway transport education committee, of which Dr. P. P. Claxton, United States Commissioner of Education, is chairman.

The committee, which was formed last May at the invitation of the Commissioner of Education, in addition to Dr. Claxton, includes Thomas H. McDonald, Chief of the Bureau of Public Roads, United States Department of Agriculture; Col. Mason M. Patrick, Corps of Engineers, United States Army; Roy D. Chapin, president of the Hudson Motor Car Co.; W. S. Keller, president of the American Association of State Highway Officials; H. S. Firestone, of the Firestone Tire Co.; Dean Bishop, of the University of Pittsburgh, and Prof. Tilden.

The membership of the committee is designed to include representatives of all governmental, educational, and industrial groups interested in the advancement of education in highway and highway transport engineering.

The formation of the committee last May was the first step in a Nation-wide undertaking on the part of these groups, and it is expected to lead to better training of larger numbers of highway and highway transport engineers to fill numerous positions which will be available for them in the near future.

The new director will take charge immediately of the work planned by the committee, which includes the compilation of economic, scientific, and engineering data relative to highway construction and highway transport, and the distribution of these data to educational institutions. Because of recent development in the science of road construction as it is now practiced, and the still later development of automotive and transport engineering, there are no up-to-date textbooks for use in colleges and technical schools. Several large governmental and industrial agencies have agreed to supply data for such books from their experience.

It is expected that Prof. Tilden's work ultimately will lead to the formation of a comprehensive program of education for highway and highway transport engineers, which will insure an adequate supply of technically trained young men to fill the ranks of the growing branches of the engineering profession.

CIVIL-SERVICE EXAMINATIONS.

The United States Civil Service Commission announces open competitive examinations to fill positions in the Department of Agriculture, as follows:

Photostat operator, to fill vacancy in the Bureau of Chemistry, at $1,000 a year. Date of examination, January 25, 1921. Apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.

Assistant in boys' and girls' club work, for men and women, at salaries ranging from $2,500 to $3,300 a year, to fill one or more vacancies in the States Relations Service, for duty in Washington, D. C. Date of examination, January 25, 1921. Open competitive examination for specialist in tropical agronomy to fill vacancy in the States Relations Service, for duty in Hawaii, and vacancies in positions requiring similar qualifications throughout the United States, at entrance salaries ranging from $1,800 to $2,500 a year. Examination February 1, 1921. Applicants for above positions should at once apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.

Open competitive examinations for the positions of photographer, $1,400 to $1,800 a year; assistant photographer, $1,100 to $1,400 a year; photographic laboratory aid, $900 to $1,100 a year. A vacancy in the position of photographer, Forest Service, San Francisco, Calif., and vacancies occurring in the Federal classified service throughout the United States, including the departmental service, Washington, D. C., at the salaries indicated, will be filled from these examinations. Examination February 9, 1921. Apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.

Michigan is the first State to offer a reward for planting nut trees beside highways. In Europe the profit from roadside nut trees assists in maintaining roads. Roadside nut trees abroad are protected from vandalism by public sentiment, and this is true of the nut orchards in the principal centers of production in this country.

Daughters of Purebreds Gain Over Dams While Lower-Grade Bulls Produce Losers

To acquaint live-stock owners with the benefits resulting from the use of purebred sires, the Bureau of Animal Industry, United States Department of Agriculture, has prepared a collection of specific facts and figures. The following incidents have just been made public:

An inferior dairy bull, Brown Bessie's Register, not only failed to increase the milk and butter-fat production of his daughters but actually lowered them.

The first five of his daughters to freshen produced in a year 2,140 pounds less of milk and 87 pounds less of butter fat than their dams.

	Milk.	Butterfat.
	Pounds.	*Pounds.*
Dams	6,121	293
Daughters	3,981	206
Decrease	2,140	87

Compared to this record is the report on three daughters of Sultana's Virginia Lad, a good purebred bull. When these heifers freshened they gave the following average yearly production as 2-year-olds:

	Milk.	Butterfat.
	Pounds.	*Pounds.*
Daughters	9,676	519
Dams	4,992	269
Increase	4,684	250

Purebreds Increase Yield.

Striking improvement due to the use of purebred sires is found in results obtained by the New Windsor (Md.) Bull Association. The average annual butter-fat production of daughters of purebred sires compared with their dams was:

Bull.	Dams' average pounds fat.	Number of daughters.	Daughters' average pounds fat.	Daughters' average gain over dams.
No. 1	208.3	7	270.5	62.2
No. 2	226.4	7	281.6	55.2
No. 3	254.0	2	369.5	115.5

Attention is directed to the fact that a bull's influence is equal to that of a herd of 20 cows. In a year's time the cow influences but one offspring, her own calf, whereas the average bull, siring a score of calves, influences each calf.

Calves sired by good purebred bulls are worth at least one-fourth more than calves of the same age sired by average grade bulls. The increased value of the calves sired by the purebred bull in one season will nearly balance the difference in purchase price of a good purebred bull over a grade.

Demonstrations Prove Value.

The value of purebred beef bulls over the common stock is being conclusively shown by a 30-year demonstration at the Sni-a-Bar farms.

In 1913, the best of the steers sired by common bulls brought $2.25 per hundredweight, or a total of $24.91 under the top price. Two-year-old steers of the first cross from these cows sired by good purebred bulls brought the highest price ever paid at that time of the year in Kansas City. They sold for 40 cents per hundredweight, or a total of $5.22 per head above the top price of bulk shipment.

Recent sheep-management cost accounting on Missouri farms brought out the fact that where good purebred rams were used the net profits averaged 50 per cent more than the net profits from flocks where ordinary grade rams were used.

FOREIGN ANIMAL DISEASES MENACING UNITED STATES

"Apparently there never was a time when the United States was more dangerously exposed to invasion by foreign animal diseases than at present."

This statement is made by Dr. John R. Mohler, chief of the Bureau of Animal Industry, United States Department of Agriculture, in his report of that bureau's activities for the last fiscal year. The report explains that, during the World War, European countries were unable to give the usual attention to the suppression of infectious diseases of animals. As a result there has been an increase, and some of the diseases have been widespread. England has been fighting foot-and-mouth disease during the last 18 months; Holland has been unable to keep it under control even with the application of the most drastic measures; and similar reports have reached the bureau from France, Italy, South America, and elsewhere.

Owing to the readiness with which the virus may be carried in the bodies of animals, in hides, and in other live-stock products, the danger to the United States has been greater recently because of the increased prevalence and virulence of the disease in Europe.

The appropriation by the last Congress to combat foot-and-mouth disease was reduced from about $1,000,000 (to be used only in case of outbreaks) to $50,000. The bureau, according to the report, considers the present fund inadequate for coping with any serious outbreak of the disease that might develop. A more liberal provision for safeguarding the $10,000,000,000 live-stock industry is urged.

16,599 HERDS PASS HEALTH TEST.

Altogether 695,364 cattle were officially tested for tuberculosis during the last fiscal year. Of these, 28,616 reacted and were removed from the herds. These figures are reported by the United States Department of Agriculture in a résumé of activities in cooperation with various States for the eradication of bovine tuberculosis.

The number of herds accredited as free from the disease was about three times as large at the end of the year as at the corresponding time a year ago. The records also show that in addition to the 3,370 accredited herds, 16,599 other herds passed the first official test, no reactors being found.

PROGRESS IN COMBATING ANIMAL PESTS AND DISEASES

The systematic campaign against tuberculosis of live stock begun three years ago by the United States Department of Agriculture has made much headway, according to the annual report of the Secretary of Agriculture just made public. On June 30, 1920, 3,370 herds, approximately three times the number at the beginning of the fiscal year, were officially accredited by the department as free from tuberculosis; in addition 16,599 herds have successfully passed one test. During the year Federal and State officials examined 695,364 animals, of which 28,616 were reactors and had to be slaughtered.

Applications for testing have accumulated more rapidly than they could be handled by the available force of veterinarians of the department. Near the end of the fiscal year 4,740 herds were on the waiting list to be tested.

Progress also has been made in the work of controlling hog cholera, the greatest limiting factor in swine production. It is estimated that as a result of the activities of the Department of Agriculture and its cooperating agencies in combating this disease a saving amounting to $41,000,000 annually is effected.

In the South, State, county, and local support is being given the department in the eradication of the cattle tick. This year 50,555 square miles were released from Federal cattle-tick quarantine, making a total of 509,080 square miles since the work was begun in 1906.

"BETTER SIRES—BETTER STOCK" GOES AHEAD

START WAR ON SCRUB SIRES.

At a combined meeting of the Rhode Island Ayrshire Association and the Rhode Island Holstein-Fresian Club, interest in tuberculosis eradication and the "Purebred Sire" campaign received special attention. The two clubs discussed plans for cleaning up tuberculosis and planned to do their utmost to eliminate every scrub sire in Rhode Island.

PUREBRED RAMS IMPROVE SHEEP.

Native ewes bred to purebred rams at the Mississippi Coastal Plain Experiment Station resulted in lambs which at the age of 6 months outweighed their dams and yielded more than twice as much wool. This result of the use of good purebred sires is announced by the United States Department of Agriculture, through the Bureau of Animal Industry, in a report covering the last fiscal year.

BETTER SIRES FOR "BANTIES," TOO.

From Bantam chickens to Holstein cattle is the range of live stock on the farm of Sam Sullivan & Sons, who recently enrolled in the "Better Sires—Better Stock" movement that is being directed by the United States Department of Agriculture. This farm, which is located in Culpeper County, Va., raises Holstein cattle, Duroc-Jersey swine, Rhode Island White chickens, White Holland turkeys, white guinea fowls, Cochin bantams, and Muscovy ducks.

Pure-bred horses also are kept on this farm, but no stallion is maintained. In accordance with the requirements of the better-sires movement, which is aimed to improve the average quality of farm live stock, all of the stock listed is bred to purebred sires.

PUREBREDS DISPLACE INFERIOR SIRES.

"I disposed of a grade bull last month."

"I sold a high-grade yearling bull."

"Disposed of a scrub bull because we expect to breed to a purebred.

"I castrated an inferior male hog and put in a purebred."

"I will have to buy hogs and they will be purebred."

These comments were received in one day recently by the United States Department of Agriculture from persons enrolled in the Better Sires—Better Stock Movement. In addition, many others stated that, although they did not own purebred sires, their female stock was bred to such animals, thus complying with the essential requirements of the better-sires campaign.

BREEDERS JOIN BETTER-SIRES CAMPAIGN IN SOUTH DAKOTA

"You have the bulls and they are needed, needed badly. Let's get them working for the breed."

This appeal, made by M. J. Flanagan, president of the South Dakota Shorthorn Breeders' Association, has been sent to all Shorthorn breeders in the State, preparatory to putting on a purebred-sire campaign. According to the plan, selling expenses will be kept down to the lowest possible figure. "But we will put out a lot of bulls," the letter of notification states, "that will do good and create a demand for better cattle. It is constructive work of the best kind."

In a letter to the United States Department of Agriculture, Mr. Flanagan, who also is president of the South Dakota Federation of Livestock Breeders' Associations, states: "With the cooperation of the various departments we shall be able to do a good work in getting purebred bulls in use where scrubs are now used."

Nine Bull Associations Flourish In a Single County of Minnesota

St. Louis County, Minn., is the champion bull association county of the United States, and probably of the world, at least as far as numbers are concerned, says a specialist of the United States Department of Agriculture, who returned recently from that district. Nine bull associations, all organized since 1918, when this territory was swept by a forest fire, have been successful, and now have 364 farmer members.

The bull associations in St. Louis County owe their existence to the forest fire which devastated this territory to such an extent that a State commission was established to furnish aid to residents of the flame-swept territory. Among other things, dairy bulls had to be provided, and the Fire Relief Commission, recognizing the practical value of the cooperative bull association, stipulated that farmers must organize such associations in order to receive this aid. The 9 associations, which resulted from the relief work, brought into the county 35 good purebred bulls, with an average value of about $300 each. As there are 1,859 cows belonging to association members, there is an average of 53 cows to each bull.

Figures obtained from more than 2,000 farms in various sections of the country in which there are no bull associations, show that one bull is maintained for every 18 cows; or in other words, almost three times as many bulls are maintained as would be necessary under the association plan. At this rate, 100 bulls, instead of 35, would have been necessary in the territory covered by these associations in Minnesota; and the expenditure would have been $30,000 instead of $10,500.

DEPARTMENT OBTAINS MANY PATENTS DURING LAST YEAR

During the last fiscal year 35 patents were allowed for inventions by employees of the United States Department of Agriculture, the benefits of which are dedicated to public use. Thirty applications for patents were prepared by the department's Office of the Solicitor during the year, some of which were pending at the close of the fiscal period.

The patents allowed cover a wide scope, and some of them are believed to be highly valuable to the public. The list of those allowed during the year includes cane stripping comb, manufacture of cymene sulphonic acid, synthetic ammonia (2), photographic sensitizing dyes (2), new insecticide, production of ammonia, curing tobacco, atmometer, phosphorus and phosphorus acid, dextrin, process for removal of hydrofluoric acid from phosphoric acid, bleaching wood, improvement in the synthetic manufacture of thymol, vanillyl amin, vanillyl acyl amids and production thereof, and fruit grader and sizer.

Applications for patents on the following inventions were pending at the close of the year: Method of manufacturing decolorizing carbon, process for the manufacture of naphthalene sulphonic acids, tree trimming and harvesting machines, panoramic camera attachment, process of sublimation, adhesive, apparatus for controlling reactions between gases (2), ammonium nitrate, insecticide and fungicide, grain samplers, malt sirup (2), process of extracting soluble albumen from whey, manufacture of furfural and volatile organic acids from corncobs, manufacture of furfural and volatile organic acids from corncob pentosan, preserving apples, grain sampler, apparatus for sterilizing fruit juices, new and improved types of bread, manufacture of sweet potato sirup, new process for preparing sirup from sugar beets, protosensitizing dyes of the isocyanine type, gelatin or glue free from mineral matter,

acids, or alkalies, and a process for preparing same.

The Government and the people of the United States are entitled to make use and sell the invention disclosed by these patents freely and without the payment of royalty to the patentees.

TO ENLIST PUBLIC SENTIMENT IN CONTROL OF FOREST FIRES

(*Continued from page 1.*)

The "west Mississippi" group leads all others in the proportion of fires of incendiary origin for the four-year period, while the "southeastern" group comes next for the period and takes the lead in 1919. These groups lead in the proportion of fires attributable to carelessness of farmers while clearing land.

Of the fires classed as incendiary in the southern groups, more than 75 per cent are believed to have been started by stockmen. It has been generally believed that fires set in the late winter or early spring benefited the range by removing the dead grass and by destroying the cattle tick. Both these theories have been disproved. Prevention of fires has been found to have no ill effect on forage, while the cattle tick is successfully eradicated only by systematic methods instituted by the Bureau of Animal Industry.

Forced to Burn Woods.

Besides the stockmen of the South, there is another class of citizens who deliberately burn the woods. These are the farmers whose houses, barns, fences, and other property are in constant danger of being destroyed or damaged by uncontrolled fires in the adjoining timber. Because of the negligence of the States in not providing protective organizations, the farmers are left no alternative. Many of these men are of the type instinctively sought out for the position of fire warden and forest patrolman when the Government undertakes to organize forest-protection work in a new State or locality because, first of all, they want to see fires stopped, and also they are readily convinced of the effectiveness of organized methods and will work earnestly for their adoption.

Recently the Forest Service has been making inquiry as to the cost of organized forest-fire protection in a State. The maximum figure of 8 cents an acre was tentatively fixed for the white-pine region in the northern Rocky Mountains and similar localities where the combination of climatic and forest factors render the fire hazard very great. The minimum of 1 cent an acre was assigned to the hardwood lands of the Mississippi Valley and southeastern States, while the pinelands of these States were assigned a cost of about 2 cents an acre. On the basis of these estimates the entire cost of adequate forest-fire protection for the country will amount to scarcely more than the amount of losses caused through neglect in the southeastern States alone.

Viewed from any angle, the conditions that exist to-day in the unorganized and partially organized portions of the country are of vital concern not only to local residents but to the country at large. The depletion of the Nation's supplies of timber has reached the point where every effort must be made to conserve the remaining stands.

The people of these States that have no protection against forest fires do not live under fire menace from choice. Many of them write to the Forest Service each year asking for relief. This can not be given under present legal regulations, until the State has made the initial move. They can perform a useful service, however, by furnishing the information requested by the Forest Service.

Organization Justifies Expense.

In the regions where it is given authority to work, the Forest Service can accomplish enough in the systematic suppression and extinguishment of forest fires to justify the expense of the work many fold. The question sheets sent out to a large proportion of persons receiving the News Letter in States inadequately protected will give an opportunity for popular expression on the question of extending the work. They can be sent without postage. Other persons wishing to join the questionnaire can obtain question blanks by sending a post-card request addressed to The Forester, Forest Service, United States Department of Agriculture, Washington, D. C.

The Forest Service and the department want to know what the country thinks about this matter and is taking this way of giving everyone who wants to express his or her opinion on this vital national question an opportunity to do so. This, then, is your opportunity. Use it now—to-day.

The various forest groups are composed as follows:

NORTHEASTERN GROUP.—*Softwood subgroup:* Maine, New Hampshire, Vermont, New York. *Hardwood subgroup:* Massachusetts, Rhode Island, Connecticut, New Jersey.

APPALACHIAN GROUP.—Pennsylvania, Delaware, Maryland, Virginia, West Virginia.

SOUTHEASTERN GROUP.—North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi.

EAST MISSISSIPPI GROUP.—Ohio, Indiana, Illinois, Kentucky, Tennessee.

WEST MISSISSIPPI GROUP.—Missouri, Arkansas, Oklahoma, Louisiana, Texas.

LAKE STATES GROUP.—Michigan, Wisconsin, Minnesota.

PRAIRIE GROUP.—Iowa, North Dakota, South Dakota, Nebraska, Kansas.

ROCKY MOUNTAIN GROUP.—*Northern subgroup:* Montana, Idaho, Wyoming. *Southern subgroup:* Colorado, Arizona, New Mexico, Nevada, Utah.

PACIFIC GROUP.—Washington, Oregon, California.

IMPROVED CROP PLANTS GIVE EXCELLENT RESULTS

"The development of improved crop plants, through breeding, selection, and in other ways, has almost limitless possibilities and has received a great deal of attention both from the Department of Agriculture and the State experiment station," says the Secretary of Agriculture in his annual report to the President. "It is exceedingly difficult," he adds, "to state accurately, in terms of dollars and cents, the value of fundamental work of this sort, but unquestionably it is tremendous."

The efforts to develop improved varieties of corn, which have been under way by department specialists for 20 years or more, have probably increased production by one-fourth. Improved wheats have added greatly to the wheat yield, and it is only necessary to mention Marquis, Kanred, Early Baart, and the new wheats of the Washington Experiment Station to realize their importance. Better potatoes have been a great factor in the production of this crop, and new varieties at present under test indicate that they mark a notable advance. The development of early velvet beans multiplied the acreage tenfold in three years, and high-yielding superior lint cottons, such as Meade, Acala, Durango, Trice, and Columbia, are of inestimable value. The recently developed Victor cowpea is far superior to any previously known.

"Similar, but perhaps less striking, results have been secured with most of our important crop plants, and illustrate clearly what will, without doubt, continue to be a fruitful field of activity for a large corps of investigators," declares the Secretary.

FREEING SOUTH OF CATTLE FEVER.

Following the eradication of cattle-fever ticks, well-bred stock may be safely introduced in the South, the Bureau of Animal Industry, United States Department of Agriculture, points out in a report just issued. Regions of the South now removed from Texas-fever quarantine are raising and marketing excellent cattle. An area of 509,084 square miles, or 70 per cent, of the area originally infested, has been freed of ticks since the work of eradication began in 1906.

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CAUTION URGED IN SELECTING FOREIGN-GROWN CLOVER SEED

Poor Seed May Result in Partial or Total Failure of Crop.

Should Be at Least Medium Sized, Fairly Uniform, and Free of Adulterants of Any Kind—Seeding Begins as Early as February in Some Localities.

Red clover has been styled the corner stone of agriculture in the North Central and Eastern States.

Many farmers will begin laying the corner stone as early as February, when it is customary in many sections to sow red clover on the surface of the snow, so that it will sink into the soil with the first thaw in the spring. Red clover is hardy, and is not injured by ordinary cold; and the fact that it can be sown at a season when work on the farm is comparatively light adds to the economy of its cultivation.

The first important point to be observed is the selection of good seed, say specialists of the United States Department of Agriculture. Considerable care should be used in this respect well in advance of the time of seeding. This is particularly true at present, when a large proportion of the red clover seed used in the United States comes from abroad. If poor seed is used the expected crop may be a partial or total failure.

Good Seed Is Plump.

Good red clover seed is plump or well filled, bright with a slight luster, the color of individual seeds ranging from violet to light yellow. The individual seeds should be at least medium sized and fairly uniform, free of adulterants of any kind and from seeds of noxious weeds.

Home-grown seed is desirable, especially in the North, because it is almost certain to be adapted to local conditions. If it is not available, samples should be obtained from reliable dealers. These should be examined for adulterants, weed seeds, and shriveled seeds. They should also be tested for germination before purchasing in quantity.

In the absence of more accurate methods an estimate should be made of the proportion of true red clover seed and of weed seeds and other impurities. From the red clover seed separated from all impurities, a counted number, as 100, should be taken just as they come. These seeds should be placed between layers of moistened cloth or paper or merely covered in a bed of sand or light soil. A dinner plate, covered with another, is a suitable germinating receptacle. It can be kept in the living room, at a temperature between 65 and 85 degrees. Between the third and sixth days the sprouting ability of the seeds should be shown.

It should be borne in mind that the sowing value of the seed is represented by the amount of true clover which will germinate with reasonable promptness. Thus, if four-fifths of a sample is pure clover and only three-fourths will sprout, then only three-fifths, or 60 per cent, of the original seed as offered will grow. Thus, the germinating test has an important bearing on the worth of seed offered to the farmer.

Protects American Farmers.

A seed-testing service is maintained by the United States Department of Agriculture, where 29,638 samples of various seeds were examined and tested in the last fiscal year—16,442 in Washington and 13,196 in the five branch seed-testing stations. Similar service is offered by the various State experiment stations. The department also exercises a strict inspection service over field seeds brought from foreign countries, and last year 5,000,000 pounds of various seeds were rejected or held for cleaning before being allowed to be offered to American farmers.

Nevertheless, the closest scrutiny is necessary on the part of the farmer who desires a good stand of clover, either as a forage crop or to turn under for the improvment of his soil.

It is important that the testing of seed be done early enough that a sufficient supply of pure seed can be purchased in time for use; and if seed is to be sent to one of the Government or State testing laboratories, at least two weeks should be allowed.

GARDENERS SHOULD PREPARE NOW FOR APPROACHING CROP

If Cover Crop Was Not Sown Plow or Spade the Soil.

Rubbish, Dead Vines, Plants, Bean Poles, and Tomato Stakes Should Be Taken Away to Protect Plot Which Proves Valuable as Provider for Family.

Whether it is conducted on an extensive scale to supply the market or whether it is to produce food for the family the garden plot is likely to be the most profitable acreage on the farm. Gardening really begins in the fall. When the last vegetables have been removed and stored the prudent gardener sets about to prepare the ground for the next year's crop.

Clearing Away Refuse.

Any rubbish, dead vines or plants, and bean poles or tomato stakes should be cleared away, says the United States Department of Agriculture, and the ground sown to rye or some other green crop to prevent the loose earth from washing under the winter rains. A clover crop also improves the physical condition of the soil. When a cover crop can not be supplied the next best thing that may be done is to plow or spade the soil and allow it to lie rough throughout the winter. This practice destroys many insects that lie just below the surface. The winter frosts have a lightening effect upon the soil, especially on clay soils.

The earliest and choicest vegetables are harvested by the man who maintains a few hotbed sashes and uses them to start his garden. He is able to handicap the frost line by several weeks, and to set strong, well-developed plants in his garden at a time his neighbors are planting seed.

The farm income is at its lowest point in the early spring, but it can be increased considerably by the sale of young plants grown in the hotbeds and ready for transplanting. Tomato, cabbage, eggplant, and pepper plants are always snapped up when the first warm planting days come, and they are easily grown in

the hotbed. A little more space and a little more seed than the grower needs for his own use are likely to bring good profits. Before the ground freezes in the fall is a good time to clean out the old hotbeds.

Unless the soil used in the hotbed is to be exchanged for fresh earth it should be shoveled from the bed and tossed into a pile near by. The decayed manure from the bottom is scattered over the pile and thoroughly mixed with it to form rich soil for next year's beds. Over this goes a coat of straw or leaves held down by bits of board to keep it from blowing.

Some farmers find it convenient to use evergreen boughs instead of straw for the outer covering.

Hotbed Should Face South.

New hotbed pits should be dug so that they will face the south, and the location should be selected so that the beds will be protected from cold north winds and late spring storms. Sometimes the earth taken from the new pit is suitable for use in the hotbed, but this is the exception rather than the rule. A few loads of leaf mold from the woods mixed with the natural soil will often form a smooth, rich, stoneless mass which gives an ideal hotbed filler.

The back or north side of the frame is usually from 12 to 18 inches high, while the south end is about 8 inches, so that the whole bed may have pitch enough to get the sun upon all parts. The standard hotbed sash is handled by most dealers, and measures 3 feet in width and 6 feet in length. A frame just wide enough to support the sash seems to be the most satisfactory, though wider beds are sometimes used with supporting ridges placed at 6-foot intervals. A well-painted cypress sash, glazed with good double-strength glass well set in putty should give the careful gardener 12 to 15 years' service.

Heat for the hotbed is furnished by means of a bed of horse manure 8 to 16 inches thick in the bottom of the pit. Permanent hotbeds are often heated with coils of steam or hot-water pipes under the bed.

Hotbeds require constant care to prevent their becoming overheated, especially during bright weather.

Approximately 4,320 acres of land were restored to the Government during the last fiscal year, as a result of land-claim cases handled by the Office of the Solicitor for the United States Department of Agriculture. The timber stand on this land is estimated at 22,235,000 feet, valued at $88,840.

Cowpeas Possess High Value as Stock Feed and Source of Soil Improvement

Few crops can be utilized in as great a variety of ways as cowpeas. For centuries they have been grown for human food in Asia, Africa, and in the Mediterranean region of Europe. In this country, particularly in the Southern States, the crop is commonly used for this purpose, but its most important use by far is in the feeding of live stock, being utilized for soiling, hay, silage, and pasture. It is also of great value as a green-manure crop to increase the humus and nitrogen content of the soil upon which it is grown. These are points brought out in Farmers' Bulletin 1153, Cowpeas: Utilization, recently published by the United States Department of Agriculture, which discusses not only the utilization of the crop, but the methods of growing and harvesting it for each of its various uses.

Have High Food Value.

Cowpeas, according to the bulletin, are not grown for seed more generally because of the uncertainty of the crop, the expense of harvesting, and the comparatively low yield obtained. In localities well suited to production it will be found highly profitable to grow cowpea seed on a large scale, especially if the best machinery for handling the crop is used. The seed has a high feeding value, but is rarely cheap enough to be used as feed. It can be stored for a considerable length of time without much danger of loss of vitality. As it is subject to attacks from insects, especially the cowpea weevil, the seed produced in Southern States should be placed in cold storage, the bulletin recommends.

Cowpea hay is an excellent forage for all kinds of stock. Even the straw obtained from thrashing the pens for seed is a valuable stock feed. As a rule cowpeas should not be cut for hay before the pods begin to turn yellow. The best quality is produced and the hay cures most readily if the vines are cut when most of the pods are full grown and a considerable part of them matured. If cut before this stage the vines are watery and difficult to cure, while if left too late before cutting there will be an unnecessary loss of leaves in handling and the stems will be tough and woody. The hay is somewhat difficult to cure, but with attention to the stage of growth and to weather conditions little more trouble will be experienced in obtaining well-cured cowpea hay than clover or alfalfa hay.

The bulletin recommends that cowpea hay be substituted in the Southern States for much of the hay now being purchased from the North and West. A yield of from 1 to 2 tons to the acre can usually be expected, and frequently under favorable conditions a much larger yield is secured.

Cowpeas alone have not given good results as a silage crop. In addition to the high protein content, the green vines contain a large proportion of water, producing a watery silage that keeps poorly and is not well relished by stock. The best silage is obtained when this crop is grown with corn or sorghum.

Serve Best for Hogs.

Although pasturing cowpeas is not thought the best farm practice, under certain conditions it is advisable and quite profitable. Any kind of live stock may be pastured on cowpeas, but hogs are generally used. The best time for turning the stock on cowpeas is when the crop has reached the stage of maturity thought best for hay.

As a soiling crop, the cowpea can be used advantageously to supplement crops with less protein, such as corn, sorghum, and millet. It is used more as a soil builder than any other legume, because it is so easily grown, has such a marked effect upon succeeding crops, and thrives under a great diversity of conditions.

TUBERCULOSIS MENACE FOUND IN CONDEMNED CATTLE MEAT

Following the tuberculin testing of 37 cattle on an Indiana farm, 14 animals which reacted to the test, when slaughtered in an establishment under Federal supervision, showed lesions of the disease not only on the organs, but even in some of the meat. In reporting the incident to the United States Department of Agriculture, Inspector R. R. Newman explained that the demonstration was of unusual interest because all the cattle were purebred.

One of the cows, which had supplied milk for local use, showed extensive lesions of tuberculosis in the mammary glands, a condition associated with probable infection of the milk. Several stock raisers, who saw the tuberculous carcass, have signified their desire to have their herds qualify for a place on the accredited-herd list. Herds on this list are officially recognized as free from tuberculosis.

CROP PRODUCERS ASSISTED BY GOVERNMENT'S REPORTS

Investigations Prove that Market Is Stabilized by Department's Estimates.

Wholesalers and Buyers Provided With Important Information Regarding Supply and Demand—Official Figures, However, Prove of Little Value to Those Who Speculate.

Who benefits most from the crop reports issued regularly by the Bureau of Crop Estimates of the United States Department of Agriculture on practically every crop grown in every section of the United States?

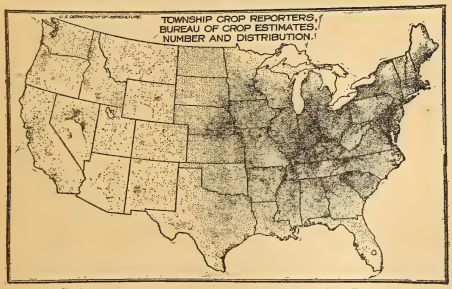
It is supposed by some growers that crop reports are most beneficial to speculators, or those who buy and sell crops, but according to the Bureau of Crop Estimates of the department the reports stabilize the markets. Speculation thrives under uncertainty. Information regarding crop yields in the hands of a few gives the few who are informed an opportunity to speculate if they are so inclined. It is an important part of the business of buyers and wholesalers to study the supply and demand of crops. Were it not for the crop reports of the Department of Agriculture it would be impossible for producers of crops to make such a study. The widespread knowledge of facts—such facts as the crop reports give—reduces and even makes speculation impossible. Thus these reports benefit the farmer or producer who does not even know that they exist.

Benefits More Marked.

To the producer who studies the reports the benefits are even more marked. The farmer may get from observation the local situation regarding yields and prices of crops, but it is only through the crop reports that he is able to learn the national situation. Not only are the most recent production figures and price figures obtainable given in the crop reports, but data of this character for previous years are given. The producer who studies them can keep as well informed on the general trend of market prices as the buyer in large cities. With this information the latter has no advantage, according to the Bureau of Crop Estimates.

Farmers spend 90 or more per cent of their time in the problems of production, yet these in many cases are no more important to their prosperity than problems of marketing. The producers are not so favorably situated for studying the market problems as are the buyers in the cities, but the Government crop reports enable them to get a most reliable understanding of local, State, and national marketing situations and at a minimum of time.

That these reports are of the most reliable nature has been demonstrated in many cases. For example, the estimate on the rice crop of the United States, made by the Bureau of Crop Estimates for a recent year, was 28,917,000 bushels. After the crop had been harvested the receipts at the rice mills showed a yield of 28,995,213 bushels. The difference between the estimate and actual receipts was only two-tenths of 1 per cent.



Each of These 30,000 Dots Represents a Township Crop Reporter.

Crop reports are based upon many thousands of field reports received by the Bureau of Crop Estimates. At least 90 per cent of these field reports are from actual producers. In cases of crops which are produced extensively throughout the United States, such as potatoes and hay, as many as 100,000 reports, 90 per cent of which are from producers, are used as a basis for determining the figures published in the Government crop report.

Even within so comparatively small an area as a State there are many various local factors affecting climate and crop conditions that are of vital importance in the marketing of products. New York, for instance, with its 400 miles of spread from east to west, presents a case worth studying. Last year the farmers in the western counties of the State harvested a large crop of potatoes of good keeping qualities, while in the eastern counties the potato yield was poor and of a quality not adapted to storage. Based on the hundreds of reports received by the Bureau of Crop Estimates, the United States Department of Agriculture recommended that growers in western New York hold their crop until the potatoes produced in the eastern part of the State had been sold on the market. However, there was a heavy shipment early in the fall from all sections, and prices suffered. Meanwhile, a large number of growers near the eastern market, seeing an influx from their western neighbors which caused the market to be flooded, held back and put their potatoes in storage, with much resulting spoilage.

Governed by Local Conditions.

Farmers of both sections governed their action by local conditions and lost thereby. Seventy-five years ago, with primitive methods of transportation and general dependence of each community on local supply, their action would have been considered wise. Nowadays, when the fruits and vegetables of California can be laid down in New York within a week, the farmer needs to be guided, not by the crop in his own township or even county or State, but by the supply and demand in the country at large, and even abroad.

It is for this purpose that the United States Department of Agriculture maintains a crop estimate and reporting service, which gives to the public each month the closest estimate on crop conditions in every State in the United States.

ICE-HARVEST TIME AT HAND.

Farmers who have not already done so should prepare to lay by a store of ice now for cooling milk and for household use next summer. In places where nature provides a sufficiently low temperature, the cost of harvesting and storing ice is low when compared with the saving effected. Ordinarily, it is safe to harvest 2 tons of ice for each cow in the herd. This will allow for melting and leave enough for family needs. Where cream only is sold, about one-third of that quantity of ice will be needed.

Two farmers' bulletins, No. 623, Ice Houses and the Use of Ice on the Farm, and No. 1078, Harvesting and Storing Ice on the Farm, may be had by applying to the Division of Publications, United States Department of Agriculture.

Weekly News Letter

Published every Wednesday by the
UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS
John L. Cobbs, Jr., Chief

PRESS SERVICE
Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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RELATION OF FARM TENANCY TO SOCIAL LIFE STUDIED

To determine the effect of farm tenancy on the social life of rural communities, the United States Department of Agriculture has carried on studies in a number of States during the last year. Seven States—Georgia, North Dakota, Missouri, South Carolina, Maryland, Iowa, and Nebraska—have cooperated in this work. Twenty-five hundred farms and farm families in 20 different communities were intensively studied. It is expected that the results, when tabulated, will throw much new light on the entire subject of farm tenancy.

Studies in sales of farms, from the social angles, have been carried on in five counties in Indiana. The number of sales in each county has been ascertained, the buyers and sellers located, the human side of the transaction inquired into, and the social as well as the economic reasons for selling and buying brought out.

DEPARTMENT'S BOX-TESTING DEVICE AIDS BIG INDUSTRY

Government exhibits are often beneficial to big business, as demonstrated by the display of the Forest Service, United States Department of Agriculture, at the Colorado State fair this fall. One of the features of this exhibit was a miniature model of a box-testing machine devised and used by the Forest Products Laboratory, Madison, Wis., to test the strength and durability of wooden containers.

Of the thousands of people who saw the model operating, many were probably attracted merely because it was moving. One exception, however, was the general manager of the largest fuel and iron company in the West, who saw an opportunity to test the efficiency of a new style band hoop invented in his plant for use on nail kegs. As a result of these tests, a wire hoop has been substituted by the company for the ordinary iron-band hoop formerly used on kegs—the saving in this one instance covering many times the cost of the exhibit.

CAMPAIGN FOR BETTER SIRES NOW REACHES TO PORTO RICO

The first enrollment in the Better Sires campaign to be received from the insular possessions has just been forwarded to the United States Department of Agriculture from Porto Rico. The enrollment blank was sent by the director of the Porto Rico Experiment Station, and was from a poultry raiser in Luquillo. The new member has disposed of 28 head of scrub poultry and is now making arrangements, through the department, for the shipment of 2 purebred cocks and 20 purebred hens.

This enrollment marks the beginning in the insular possessions of a movement which has created much interest and which has done much to improve the livestock interests in the United States. It also may open a new market, the department specialists say, for export trade in purebred stock of all classes.

GOVERNMENT AIDING STATE FARM MANAGEMENT BUREAUS

Several of the States, with the aid of the United States Department of Agriculture, are establishing farm management departments. Efforts are in progress to work out a system of cooperation under which a maximum amount of research work can be done, with an equitable division of expenses between the Federal and State Governments.

The Colleges of Agriculture in Arkansas and Mississippi have established departments of farm management and home economics. Every effort is being made by these departments, and in other States by the United States Department of Agriculture cooperating with the State colleges, to assist farmers in their problems of management. This is accomplished by distribution of farm account books, supplemented by surveys, lectures, correspondence, newspaper articles, bulletins, and circular letters.

An important phase of this work is the training of county agents and other instrumentalities to bring to farmers in terms of their own business the principles of efficient organization and management. Instruction is given to groups rather than individuals. Although this program has not been put in full operation in some States, the demonstrators in 26 Commonwealths, cooperating with the department during the last year, have worked with more than 52,000 grouped farmers.

Business men, as well as farmers, are becoming more interested in farm management problems, as the result, the department specialists say, of economic conditions brought about by the war. This, together with the need for farm accounts made necessary by the income-tax law, is making farm management work one of the most important extension projects.

DRIFT TO CITIES STUDIED IN FARMING COMMUNITIES

In order to throw more light on the important problem of the drift of population from rural sections to cities, and to determine, if possible, the cause and remedy, the United States Department of Agriculture during the last year has made a study of one farm community each in New York, Maryland, and West Virginia, in cooperation with the colleges of agriculture.

The type of study has been historical and analytical, covering the last 100 years. The special questions at issue in this community analysis are the "migration of young people from the farms to the town and city"; "the remedy for overmigration"; "the influence of farm communities upon national life." The results of these studies will be published during the ensuing year.

The variations in social life in communities which are founded upon different types of agriculture are being studied in dairy, grain, and truck farming localities. Whether the people differ according to the types of farming, and, if so, in what respect they and their institutions vary, are the questions at issue.

USING COWPEAS FOR SILAGE.

For silage, cowpeas should be cut when the pods first begin to turn yellow. In many sections alternate rows of cowpeas and corn are put in the silo, but the most common method, perhaps, is one load of cowpeas to two or three loads of corn. This mixture is easily handled, packs quite satisfactorily, keeps well, and makes a superior quality of palatable silage. Although the vines may be put in the silo without cutting, they will pack much closer if run through a silage cutter. Much care should be taken to see that the silage is well distributed and well packed.

MOTION PICTURES DESCRIBE DEPARTMENT'S WORK

By F. W. Perkins, Assistant in Charge, Motion Picture Activities, U. S. Department of Agriculture.

Motion pictures for use in making common property of the knowledge developed by the investigations of the United States Department of Agriculture and in acquainting the public with the methods and significance of important lines of work carried on by the department are being used with increasing frequency in all sections of the country. The best proof of this is that the demand for these films has doubled in the past four months. At the present time the requests for loans of these pictures is greater than the supply. It would be possible right now to make good use of twice the supply that is available.

Equip Motor Trucks With Projectors.

Motion pictures are going to the farmer principally through the portable projector—the small machine, about the size of a suit case, that can be transported easily from place to place and hooked on to a convenient lamp socket. Should there be no lamp socket—as is the case in most rural communities—the users of agricultural "movies" are using portable generators that can be operated on automobile engines or carried along in an automobile. In two or three States the agricultural extension organizations have equipped motor trucks with projectors, films, and a screen. The trucks are sent through a territory which has been placarded in advance. Arriving at the community where the pictures are to be shown, the projector is trained from the truck to the screen and the show begins as soon as darkness falls. Or, wiring may be run from the truck to the projector indoors, and the show may be given under cover in bad weather.

The motion pictures produced by the Department of Agriculture now include 120 subjects. Many of the pictures should be of great interest to the city dweller as well as to the farmer, for the scope of activities of the Department of Agriculture is so great that some of its work, at least, is of vital importance to every man, woman, and child in the country. New subjects are constantly being produced. In all the pictures every effort is made to make them as interesting as possible and at the same time to retain the accuracy of statement that is demanded in Government productions.

GOVERNMENT AIDS REINDEER INDUSTRY OF FAR ALASKA

When Alaska becomes so cold that an ordinary Jersey cow would freeze solid without a struggle, the reindeer blows a cloud of steam over his shoulder and wonders when there'll be an end to the muggy weather. Nor is the reindeer dependent upon corn-filled silos and cottonseed meal for his winter ration. He asks only a chance to get out on the frosty barren, where he can scrape the snow from the frozen moss, and he'll obtain his own ration for the long eight months of cold weather. These are the attributes which make the reindeer the domestic animal of the natives of Alaska, to whom some form of animal industry is essential.

Realizing the economic importance of this unique animal, the Bureau of Biological Survey, United States Department of Agriculture, has established an experimental station at Unalakleet, Alaska. The new station has a grazing expert and a veterinarian in its personnel and it is supplied with a well-equipped laboratory. Its primary purpose is to serve the reindeer industry by assisting the owners to rid their herds of parasitic pests which have inflicted considerable damage heretofore, and to obtain better utilization of the pasturage by regulating the grazing lands. Crowding the herds into limited areas has encouraged the development of parasites and has lessened the reindeer's food supply. Reports received by the department indicate that the new station is already correcting these troubles. It is expected that a bulletin on the reindeer industry will be issued in a few months.

MAKE A COMPOST HEAP—SAVE THE GARDEN RUBBISH

Garden waste, decayed vegetables, dead vines, weeds, and the organic rubbish that collects about the place during a busy summer may be cleaned up and put to work again through the agency of a compost heap, say specialists of the United States Department of Agriculture. Start the heap by laying down a bed of stable manure which has not been burned or heated. The size of the pile will vary with the amount of refuse to be used; for ordinary uses, if the bed is made 8 feet long by 6 feet wide and 2 feet deep it will serve the purpose. Over the manure spread a two-foot layer of refuse and cover with another layer of manure. This last layer need be only a foot in thickness. Repeat the layers until all the waste has been disposed of and then cover the whole with a layer of earth.

If it is desired to add to the heap from time to time the top layer may be opened and the new material emptied into the hole thus made. This is convenient for the suburban home where there is no animal to consume the kitchen waste. In the spring the heap is well mixed with a fork and the compost is ready to be spread on the garden plot. The heating manure will effectively destroy any weed seed present and will also break down the structure of most of the materials that have been thrown upon the pile. The process may be continued indefinitely by simply adding enough manure to insure heating. Compost is especially valuable for use in hotbeds and coldframes.

EXCESS OF ALFALFA FEARED FOLLOWING SLUMP IN COTTON

An unusually large proportion of acreage in the irrigated lands of the Southwest was planted to cotton during 1920, according to a recent survey by the United States Department of Agriculture. The cotton growers are now disappointed at market conditions and their present tendency is to turn their cotton land back to alfalfa, because alfalfa during the last season has been scarce and prices high. Department specialists believe there is danger that this irrigated land will be planted to alfalfa to such an extent that by the end of next season the supply of alfalfa hay will be in excess of the local feed requirements. It would seem the part of wisdom to continue to devote a fair proportion of the irrigated land to cotton, using the most efficient and economical methods of production, in the expectation that market conditions next year will give a fair return for the crop.

In any event, an excessive alfalfa acreage should be avoided, because the livestock population of these irrigated valleys is now below normal and the alfalfa crop is too bulky to be moved long distances to market. In general, the action most urgently needed in the valleys of the Southwest is the increase of live stock, so as to permit a return to a sound basis of diversified farming.

The chief value of cowpea hay lies in its high percentage of digestible protein. This has been verified by numerous feeding tests.

America Requires 16,000,000 Pounds of Sugar-Beet Seed Every 12 Months

One of the first requisites of a permanent and satisfactory beet-sugar industry is an adequate supply of seed of good quality. It has been scarce and as a result the production of sugar-beet seed in the United States has made rapid progress during the past few years. The present annual requirement in this country is approximately 16,000,000 pounds, of which about 50 per cent is now produced within the Nation's borders. With the continued development of the sugar-beet industry more and more seed is required each year, but it is confidently expected by specialists of the United States Department of Agriculture that eventually the total American requirement will be grown in this country. In order to encourage the growing of sugar-beet seed and assist in its development along proper lines, the department recently published Farmers' Bulletin 1152, Growing Sugar-Beet Seed in the Rocky Mountain States.

Investment Required Large.

The development of this industry, according to the bulletin, has been greatest in the irrigated sections of Colorado, Montana, Utah, and Idaho, and special reference is given in the bulletin to the growing of sugar-beet seed in this region. The industry is best adapted to large operators, the investment required for special machinery being so great that the business is not really profitable on less than 100 acres. It is to the growing of sugar beets on a large scale that the instructions in the bulletin refer.

The sugar-beet plant is a biennial and the roots do not, under normal conditions, send up seed stalks and develop seed until the second year. Beets of small size are grown the first season, are stored in pits known as silos during the winter, transplanted in the spring, and the seed is harvested at the end of the second season.

Only small-sized roots not over 16 ounces in weight are used for commercial seed production. The 8-ounce beets are usually considered the most profitable. These are known among seed producers as stecklings.

Roots for commercial seed production are usually started about the same time as beets intended for factory purposes, though some growers have had better success by starting their stecklings a little later, as in June. July sowings may be satisfactory if conditions happen to be just right, but usually contain a large percentage of roots too small for profitable handling. To keep the roots from growing too large, seed is generally sown at the rate of 10 to 16 pounds per acre and the plants are left unthinned. It is important that the seed be of highest quality and, because an even stand is highly desirable, the bulletin recommends that germination tests be made. Roots standing in open, exposed places are apt to develop too large to make good stecklings. This crop should be cultivated and kept in a vigorous growing condition until harvest.

The steckling harvest should be started before freezing weather. In northern Colorado it generally begins by September 20 and is usually completed with all the beets in the silos by October 10. Harvesting begins by mowing the tops of the stecklings as close to the ground as practicable. If the mowers are run first one way and then back again on the same row, many leaves will be cut off which would not be removed if the machines were run in one direction only. The beets are then plowed out, and in order to do this work so that they may be gathered more readily, it is frequently desirable to irrigate before harvesting, especially if the soil is dry. If the foliage of the stecklings is thick and heavy, it pays to gather the leaves and silo them for feed, but usually they are left on the ground to dry. In order to prevent drying out, stecklings must be hauled immediately after being pulled.

Siloed in Long Trenches.

Stecklings are siloed in long trenches made with plows, irrigation "A's," and road graders. The trenches are usually a rounded V in shape, and the roots are piled up to the level of the original surface, generally about 18 inches deep at the middle and 4 inches or less at the sides. At the close of each day's operations all newly filled silos are covered lightly and later the permanent winter covering, which consists of at least 30 inches of earth, is gradually built up and completed early in November.

In early spring the silos are opened and the stecklings are set out. Largest yields usually result from early transplanting. In northern Colorado this work begins the middle of March if the weather is favorable, and is rushed so as to be completed by the middle of April or earlier. Stecklings are planted in rows 36 inches wide and are distributed by gangs who carry the roots in sacks and drop the beets 20, 16, or 12 inches apart, depending upon their size. Stecklings usually start better and are more easily planted when their tap roots are cut off of the sloped portion. After the beets are dropped, planting gangs follow immediately and set the roots, using a shovel or spade, or sometimes sticking them into loosened soil prepared with a subsoiler. It is important to firm the earth thoroughly around the roots at transplanting time. Stecklings start most easily when covered with only about one-half inch of soil.

Beet roots naturally start quickly and early cultivations are very important. If the soil is not stirred after the first irrigation, the earth frequently shrinks away from all but the lower part of the roots, resulting in a drying up of the beets and a decided unevenness in the maturing of the crop.

In arid sections all seed crops may safely be cut while the foliage is still green and before the seed balls have become dry enough to shatter. Harvesting must be done quickly to prevent shattering of seed. The stalks are cut close to the ground with hand sickles and immediately shocked in bundles about 30 inches wide at the top. In 10 to 20 days they are usually dry enough to thrash or stack.

The yields of sugar-beet seed in the Rocky Mountain States average approximately 1,000 pounds to the acre, with a range of 300 to 3,000 pounds.

QUALITY IMPORTANT FACTOR IN MARKETING FARM PRODUCE

An example of the part that quality plays in a business of direct marketing of farm produce is furnished by the experience of a man in Kentucky who markets eggs, dressed poultry, meats, and fruits to consumers in Nashville, Tenn.

The business was established over two years ago by obtaining a friend as the first customer. From this modest beginning the producer has obtained sufficient customers to buy all of the high-grade produce he can supply. Most of the shipments are made by parcel post.

This business is conducted on the basis of high quality with adequate returns. Customers are selected with as much care as most consumers show in selecting a producer from whom to buy farm produce. Customers are retained by never breaking the rule to supply only the best produce raised on his own farm. If, when an order is obtained, this farmer does not have produce of the highest quality, he informs the customer and states that unless otherwise instructed the produce will be shipped at the earliest possible date.

Guam Forges Ahead of Many States in Boys' and Girls' Corn-Club Work

The fact that Guam leads 19 States in boys' and girls' corn clubs and is ahead of almost as many in other phases of clubwork may be somewhat of a surprise to the person who thinks that not much of consequence can be accomplished on this little island. At the close of the fiscal year ending June 30, 1920, there were enrolled in the various clubs 545 members, 439 of whom completed the season's work and submitted reports. According to the census of 1920, the total population of the island between 5 and 14 years old was 3,490, showing that 15.4 per cent of the children are enrolled in the clubs.

Show Average of $8.

The clubs that have been organized and their enrollment were: Corn clubs, 105; bean clubs, 114; taro clubs, 20; pig clubs, 78; and poultry clubs, 187. The total value of the products raised was $3,513.63, or an average of $8 for each member reporting the results of his work.

A report published by the United States Department of Agriculture shows that the boys' and girls' club work is growing at a rapid rate. The report, which covers the Northern and Western States but does not include the 15 Southern States, shows that over 310,000 boys and girls were enrolled in this work in 1919. These club members produced almost $4,800,000 worth of products during the year. Yet, in spite of these enormous figures, Guam is ahead of many States in certain phases of this work.

In the corn club Guam, at present, has a larger enrollment than reported in any of twelve States, including Illinois, California, Ohio, Arizona, Delaware, Idaho, Massachusetts, Michigan, New Hampshire, New Mexico, Rhode Island, and Utah.

The best test of work of this kind is found in the number of club members who complete the season's work. Reports show that a larger number of boys and girls completed their work in the corn club than in each of 19 States. These States are as follows: Illinois, Kansas, Ohio, Nebraska, California, Connecticut, Delaware, Idaho, Massachusetts, New Hampshire, New Jersey, New Mexico, North Dakota, Oregon, Pennsylvania, Rhode Island, Utah, and Washington. The totals for Guam and Michigan are the same.

Some Surprising Figures.

Still more surprising figures are found in comparing the per cent of members who completed the required work in the corn club, for here Guam leads all the Northern and Western States.

Only six States in the section of the country covered by the report have organized bean clubs, and Guam has a larger enrollment in this club activity than five of them, including California, Colorado, Idaho, Michigan, and New Mexico. In the number of members completing their work, Guam is ahead of California, Colorado, Idaho, and Michigan, and has the same number as New Mexico. In the per cent of members completing the work of the season, Guam is ahead of all six, which includes the five States mentioned and New York.

In pig club work, Guam has a larger enrollment than either Nevada or Delaware. It also has a larger number completing their work than Nevada, Arizona, New Hampshire, and Vermont, and has the same as Delaware. The reports further show that this island had a larger per cent of pig club members completing the season's work than any of the 33 States except South Dakota.

One of the most popular organizations is the poultry club. Yet in this activity Guam has more members enrolled than each of 10 States including Pennsylvania, Illinois, Michigan, Arizona, Delaware, Nevada, New Hampshire, New Mexico, Utah, and Wyoming.

In the number completing their season's work in the poultry club Guam is ahead of 13 States. These States are California, Illinois, Pennsylvania, Arizona, Michigan, Connecticut, Delaware, Nevada, New Hampshire, New Mexico, Utah, Vermont, and Wyoming. The report on the per cent of members completing their work shows that Guam has a better record than any of the 33 States.

As Guam is the only place in the world having copra and taro clubs, there is no chance of comparing this work.

The boys' and girls' clubs were first organized in Guam a little more than a year ago. They are supervised by the Guam Experiment Station in cooperation with the Department of Education.

Fairs Aid Extension Work.

In connection with the extension work, considerable attention is given to agricultural and industrial fairs. These were first held in Agana, the principal town of Guam, but beginning in 1920 district and community fairs were held at various points of the island. In the last fair held at Agana, 54.8 per cent of all exhibits were made by the various clubs. At the 7 district fairs, held during the past summer, 17 per cent of the exhibits were made by boys' and girls' clubs. In addition to the club exhibits, individual members exhibited in other classes, where they were quite successful in competing with their elders. A fair to be held at Asan in October, 1920, was to be devoted exclusively to the work of the boys' and girls' clubs.

CORN AIDS DAIRY COW RATION.

Producers Ignore Its Value as Cheap and Nutritious Food, Specialists Assert.

With well-filled corn cribs on many farms, and relatively low prices prevailing this year, it is time, says a feeding specialist from the Dairy Division, United States Department of Agriculture, that correction should be made of the impression found in certain localities that corn is not good feed for dairy cows. Certain recent inquiries on this subject indicate that the use of corn in the dairy ration is not understood by all dairymen; and it is hoped that a correction of this impression may lead to a greater utilization of the large 1920 crop for dairy-cattle feeding.

"When it is fed for a definite purpose, with a complete knowledge of its limitations, as well as its true worth, corn is one of the best and cheapest grains we have that can be used for the economical production of milk," says the feeding specialist. "Some dairymen avoid feeding it altogether, on account of the mistaken idea that it is not suited to a cow producing milk. This is because it is so generally used for fattening both hogs and cattle, and because it has not been successful when used alone for dairy-cow feeding."

The function of corn in the ration is to furnish the animal with material for producing heat, energy, and fat; but is rather low in protein and deficient in ash. When fed alone, it does not supply largely the nutrients which make bone, muscle, hair, and the casein in milk. Consequently, in compounding the grain ration it is necessary to add to corn some feed which is high in this substance, such as bran, linseed meal, or cottonseed meal. Bran is useful because it not only lightens the ration, but helps to balance it. Corn-and-cob meal is largely used in feeding dairy cows, and it has one advantage over corn meal in that it is more bulky, although not so palatable. Usually, when corn forms a large portion of the grain ration, protein also should be supplied by feeding some leguminous hay, such as

alfalfa or clover, for the roughage in the ration.

Since corn can be grown on most dairy farms, supplies energy in a cheap form, and is palatable, and since, when it is made into silage it provides the cheapest and most efficient form of succulence, every dairyman should have the information that will enable him to make corn the basis of a successful ration for economical milk production.

Farmers' Bulletin No. 743, The Feeding of Dairy Cows, contains a discussion relative to the digestible nutrients found in corn, and gives samples of grain mixtures of which corn forms a large part.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended January 1, 1921:

The Black Fly of Citrus and Other Subtropical Plants. Department Bulletin No. 885.

Principles of Livestock Breeding. Department Bulletin No. 905.

Life History of the Grape-Berry Moth in Northern Ohio. (Professional Paper) Department Bulletin No. 911.

Cottonseed Meal for Horses. Department Bulletin No. 929.

Peanut Oil. (Revised.) Farmers' Bulletin No. 751.

Selection and Preparation of Fowls for Exhibition. Farmers' Bulletin No. 1115.

Growing and Utilizing Sorghums for Forage. Farmers' Bulletin No. 1158.

Farm Inventories. Farmers' Bulletin No. 1182.

The Care of Leather. Farmers' Bulletin No. 1183.

The Farm Woman's Problems. Department Circular No. 148.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1158; Department Bulletin No. 885; Department Circular 148.

The bean harvester, of which several types commonly are employed in harvesting field beans, will work well with cowpeas planted in rows, according to specialists of the United States Department of Agriculture. The most successful of these harvesters are constructed so that the long knives run under the vines, cutting off the stems beneath the surface of the ground.

National Forests are Rapidly Gaining Popularity as Centers of Recreation

That the use of the national forests for recreational purposes is increasing rapidly and bids fair to rank third among the major services performed by the national forests, with only timber production and stream-flow regulation taking precedence over it, is the statement made by Col. W. B. Greeley, chief of the Forest Service, United States Department of Agriculture, in his annual report. Many summer homes are being erected on the national forests by private individuals, and the use of forests for other forms of out-of-door recreation was greater during the past year than ever before.

The summer home business promises to become an important source of revenue, Col. Greeley points out. On the Angeles Forest in southern California, for example, a total of 1,329 permits for summer residences and commercial resorts were, he says, in effect at the close of the past fiscal year. The revenue from this one item amounted to approximately $22,000. It is believed that within a few years the revenues obtained from the various recreational settlements within the Angeles Forest will pay the entire cost of protection and administration.

Establish Community Camps.

Many western communities are recognizing the recreational resources of nearby national forests as one of their greatest assets and privileges, Col. Greeley says, and are establishing community camps under more or less formal organization. These camps take every form from the municipal vacation camps opened on the Angeles National Forest under permit from the Forest Service and maintained and managed by the city of Los Angeles, to the improvement of some favorite picnic ground in the national forests by local citizens in cooperation with local forest officers. The picnic camps are improved by the construction of fireplaces, rustic tables, and seats, and are made available to the public without any charge. The vacation camps under municipal direction charge merely the expense of feeding and caring for the successive groups of city people who enjoy their privileges.

The growth of the recreational resources of the national forests is so rapid that specially trained men are needed to direct and plan for the most effective development of this service, Col. Greeley states. Any expenditure along these lines will be good business for the Government, since the increased receipts will return to the Treasury much more than the total amount expended.

The protection of wild life and the recognition of the national forests as natural breeding grounds of fish and game is closely related to the development of the recreational resources. To make more effective the work of game protection, in cooperation with the State and local authorities, and to secure better development of the fish and game resources of the national forests, Col. Greeley believes that Congress should make provision for the establishment of game sanctuaries, within which wild life may find security. These sanctuaries, he says, should be relatively limited in area but should be established in considerable number.

Elks Suffer Hardships.

Special attention is called by Col. Greeley to the necessity of additional protection for the "harassed and decimated herds of elk using the Yellowstone National Park and the surrounding forests. Famine and cold last winter took an unusually heavy toll from their number. Driven out of the high country by starvation and early snows, the northern herd suffered from hunters along the boundary line a percentage loss equal to that of a defeated army. Many that escaped the hunters perished from cold and starvation before spring. The southern herd also lost heavily. As a result, the total number of animals in these two herds is now estimated by the best qualified officers in the Forest Service to equal one-half of their number five years ago."

The addition to the Absaroka and Gallatin Forests of the lands still in Government ownership and under withdrawal along the Yellowstone River north of Gardiner is urged by the Chief Forester. This land, he states, is urgently needed as winter range for the elk, and its addition to the national forests will materially relieve the situation without working an injustice to the local inhabitants whose live stock use the range. If this action is not taken the outlook for the northern elk herd is gloomy. The prospects for the southern herd are more bright, but additional purchases of ground for summer feeding grounds appear absolutely essential.

A good rule to follow is that cowpea hay is ready for stacking or putting in the barn when it is not possible to wring moisture out of the stems by twisting a handful with considerable force.

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RINDERPEST CAUSING HAVOC IN CATTLE HERDS OF EUROPE

In Reply to Inquiries Department Issues Statement for Stockmen.

Plague Has Never Made Its Appearance in This Country—Quarantine Against Cattle from Infected Areas Removes Chief Source of Danger to Stock Here.

Readers of recent news articles reporting the destruction of cattle in European countries by cattle plague are making inquiry of the United States Department of Agriculture regarding the nature of this disease. For the information of stockmen in this country, the department has issued the following statement:

It is not strange that cattle plague, known in veterinary literature as rinderpest, should be unfamiliar to American live-stock owners as, fortunately, it never has appeared in the United States.

A Real Cattle Plague.

As the name signifies, it is a veritable cattle plague. Prior to the great World War it had been driven back from Europe, but to-day it is ravaging the herds of several of the European countries which were involved in the recent war. In this respect history is repeating itself, for extension of the disease into Europe from Asia in previous years has been associated with the great wars; cattle accompanying troops having acted as disseminators of the infection. Thus, if for no other reason, we may credit the reports that the Bolshevik army, by driving diseased cattle ahead of their forces has spread rinderpest among the cattle of Poland to such an extent that it threatens almost complete destruction of Polish herds.

The symptoms of rinderpest are not very characteristic. Certain appearances which are observed in one epizootic—which, in veterinary medicine, means the same as "epidemic" as applied to diseases of man—may be absent in another. Among the first signs, however, is a very high fever. Repeated chills may be observed. The animal manifests great debility. The head droops and rests on some object for support. The hair stands on end and the muzzle is dry. In dairy cows the secretion of milk diminishes very rapidly. The back is arched and the four legs are brought together under the body. As the disease progresses the mucous membranes become reddened; diarrhea soon sets in, and the discharges become fetid, viscid, and streaked with blood. Coughing is a common symptom and ulcers, or so-called erosions, may appear in the mouth, followed by sloughing. There may also be sloughing of the skin in various portions of the body. In severe cases, which are the most common in the susceptible cattle of western Europe, death ensues four to seven days after the first appearance of the disease and is preceded by great emaciation and debility.

Barred from United States.

What are the possibilities of rinderpest being introduced into the United States? While the disease may be spread by the raw products of affected animals, in most instances it is disseminated by infected animals, in the ordinary traffic with cattle. Cattle are highly susceptible to the disease. Sheep, goats, deer, and camels are also susceptible. None of

(*Continued on page 8.*)

A MIDWINTER PICNIC.

Did you ever try cooperation in ice harvesting? It works like a charm. Get one or two of your neighbors to go into such a scheme. One pond or stream and one set of tools will answer for all. It is much like a midwinter picnic, for "many hands make light work." These midwinter picnics make midsummer picnics more enjoyable, for the ice that is stored can be used to great advantage at such affairs during the hot season. On every farm there are many uses for ice. The dairy farm can hardly do without it.

The equipment necessary for harvesting and storing ice consists simply of saws, tongs, and iron bars for pushing the blocks of ice around. Nearly any shed can be made into an ice house if drainage is provided and a plentiful supply of clean, dry sawdust or similar insulating material is used. The United States Department of Agriculture can supply complete information on the proper way of storing ice.

INCREASE IN RECEIPTS SHOWN BY NATIONAL FORESTS IN EAST

Revenue Expected to Exceed $300,000 Within Five Years.

Commission Has Asked Congress for $10,000,000 to Continue Program of Land Purchase—Growing Demand by Public for Use of Forests for Recreation.

The national forests of the eastern United States, purchased by the Government for the protection of watersheds of navigable streams, and administered by the Forest Service, United States Department of Agriculture, yielded a gross revenue of $110,250 in the fiscal year ending June 30, 1920, as against less than $72,000 the previous year, according to the annual report of the National Forest Reservation Commission, just made public. Since 1917 the receipts have increased by $88,000, and it is believed that within five years the revenue from these areas will exceed $300,000.

Big Purchase Authorized.

Of the 7,000,000 acres included within the originally located areas in the southern Appalachians and White Mountains, the purchase of 1,796,788 acres has been authorized to date by the commission at a cost of about $10,500,000. The average price paid the owners per acre for forested and cut-over lands was $5.31. The estimated net balance of purchase funds from the original appropriation of $11,600,000 made for this work by Congress in 1911, is $445,429.

This year Congress has been asked to make a lump-sum appropriation of $10,000,000 to enable the commission to continue its purchase program. There is urgent reason for expediting this work. Land values are increasing and, due to the high cost of lumber, cutting is being done much more closely than heretofore, with the resultant increase of fire hazard from the large amount of brush and slash left after logging. New appropriations will be used, says the commission, first, to consolidate established areas, and, second, to extend the purchase work

to important regions where the assistance and example of the Federal Government in forestry practice is needed. Additional national forests should be established in Kentucky, West Virginia, southwestern New York and northwestern Pennsylvania, on the watersheds of the Ohio and Allegheny Rivers, and streams of like importance. There are also suitable locations for purchase areas in the rough section of northeastern Mississippi, in the mountains of Oklahoma, and possibly in northeastern Texas.

The development of the timber resources and the protection of the forests from fire are the leading administrative considerations in the eastern National forests. There has also been a remarkable increase in the use of these forests as recreational grounds. To meet this growing demand the Forest Service is providing camping grounds furnished with woods, fireplaces, shelter houses, clean springs, and sanitary improvements for the comfort and convenience of visitors. The chief importance of the forests, however, aside from their protection features, is their use as demonstration areas where lumbermen and others interested in wood-using industries can actually see the profits that may accrue from the scientific handling of forest areas.

PLANT FOLIAGE FOR EFFECT BOTH WINTER AND SUMMER

Taking the United States as a whole the average time that deciduous plants are without foliage is at least five months. During this period the farm home is occupied as continuously as in summer, and the surroundings should be as attractive as possible, say landscape gardeners of the United States Department of Agriculture. Evergreen shrubs, both coniferous and broad leaved, maintain a color throughout the winter not otherwise obtained. Used in moderation, they are a distinct addition at this season. On the other hand, many deciduous shrubs have attractive winter characters, the most striking being those bearing bright-colored berries. Then there are barks of many shades of brown and gray, with some of bright red, green, and yellow, that if properly arranged make pleasing contrasts and add to the winter beauty.

The short blooming period of the average shrub makes flowers the least important of the characters to be considered. In spite of this the color, character, and time of blooming should be considered as well as the behavior of the dying flowers, whether or not they fade to a conspicuous and undesirable color and hang on unduly or pass away without a distinctly unsightly stage.

FITTING CROP TO SOIL CHIEF FACTOR IN HAY-GROWING GAINS

New Publication Discusses Varieties Best Suited for Different Sections.

Timothy and Red Clover, While Best in Certain Localities, Should Not Be Depended Upon to Produce Maximum Yields on All Soils.

While timothy and red clover undoubtedly are the best hay crops on good soils in the northeastern quarter of the United States, they should by no means be depended on to produce maximum yields on all soils, say specialists of the United States Department of Agriculture. Other hay crops are better suited and are more dependable in some cases and under particular soil conditions. Alsike clover, for example, is better adapted to sour and moist soils than common red clover, and the two mixed together and seeded on some uplands often insures a crop where the latter seeded alone would fail. Redtop is the best wet-land grass and on such land a mixture of red-top, meadow fescue, and alsike clover usually gives good returns. While no hay grasses can be depended upon to make a commercial crop on poor land, redtop, orchard grass, and tall oats-grass are better than any others. These are facts discussed in detail in Farmers' Bulletin 1170, Meadows for the Northern States, just issued and ready for distribution by the United States Department of Agriculture.

Has Bulk of Tame Hay Acreage.

In that section of the United States, north of and including Tennessee, and east of central Nebraska, Kansas, and the Dakotas, is found 83 per cent of the tame hay acreage of the Nation. Eighty-eight per cent of this acreage is seeded to timothy and clover. While these two plants undoubtedly will continue to hold the popularity they now possess, there are a number of other plants which, though not so well known, are more desirable for particular purposes and for certain conditions of soil and climate. The latter are given special attention in the bulletin.

There is little difference of opinion as to the plants to be seeded on rich well-drained land. Timothy is seeded alone if the hay is to be sold on the market, and timothy and clover, often mixed with redtop, where part or all of the hay is utilized on the farm. Some of the advantages of these plants are that they have good seed habits, especially timothy and redtop. Red clover is a deep-rooted legume, and has a beneficial effect on succeeding crops. Timothy is considered by feeders the best hay for horses, and clover, or clover and timothy mixed produce better yields and are excellent for cattle and sheep. The comparatively long period during which these plants may be left standing without serious deterioration before cutting, together with the fact that the time of their maturity interferes little with the harvesting of the cereals and other farm work, have much to do with their popularity.

The most serious objection to the red clover and timothy mixture is due to the difference in time of their maturity, the former usually being ready to cut two weeks before the latter. For this reason mammoth clover, a variety of the common red, which is somewhat later in maturing, is sometimes substituted for red clover in the seed mixture.

Gives Best Results.

There are many soils along the southern border of the area under discussion which will give a larger hay yield if seeded to orchard grass, tall oats-grass, and alsike clover than if seeded to timothy, redtop, and red clover. These soils are usually poor in organic matter and are inclined to be sour. It is important that this mixture be cut when the plants first head out, for if harvesting is delayed they will make a tough, less palatable hay. This is especially true of orchard grass. If cut early, however, this hay will be relished by all classes of live stock. For general use in the localities referred to, the bulletin recommends the following mixture: Orchard grass, 14 pounds; tall oats-grass, 12 pounds; alsike clover, 6 pounds, per acre.

Raising hay on poor land is not satisfactory, but when it is necessary this mixture gives best results. In some places in the Middle West sweet clover is giving good results under unpromising soil conditions. According to the bulletin, no perennial hay plants will produce well on poor, sandy soil. Under such soil conditions, however, some temporary crop such as rye or oats and peas, and, along the Atlantic coast early sorghum and cowpeas are preferably to perennial hay crops.

The best temporary hay plants are the small grains seeded either alone or in mixture with some legume, such as peas, vetch, or crimson clover. Millets are sometimes used for this purpose, as are Sudan grass and coarse forages, such as corn and sorghum. In the Northern States a combination of oats and Canada field peas makes a very good hay crop. Excellent results have been obtained in eastern Maryland and Virginia with the following mixture: Oats, 1 bushel; hairy vetch, 30 pounds; white-blooming crimson clover, 10 pounds per acre.

In order to avoid losing the use of land for an entire season, and to permit

late-summer and early-fall seeding, grass crops usually follow small grains. The seed bed should be prepared as soon as possible after the grain is harvested. As a 3-inch mellow seed bed with firm soil beneath will give better results for summer seeding than one that is deeper, the disk harrow is usually used in place of the plow for preparing land for grass. Most grass seeds are very small and must have a fine, mellow, well-pulverized surface soil in order that the seedling may become established. A good seed bed may mean the difference between the success and failure of the hay crop.

Use Too Little Seed.

Most farmers use too little grass seed for best results, according to the bulletin. Rich land with a well-prepared seed bed does not require as much seed as thin land or land poorly fitted. From 20 to 30 pounds of seed per acre are generally sufficient, and this rate is usually more profitable than lighter seedings of mixtures. Small-seeded grasses such as redtop and timothy, do not require so heavy a seeding as orchard grass or rye grass. Usually 10 pounds of timothy or 6 pounds of redtop are sufficient when these are seeded alone.

In order that the seed may get a good start, it is frequently advisable to apply some readily available fertilizer. Formerly the grain crop received the fertilizer, but experiments have demonstrated that when it is applied to the grass it will not only increase the yield of this crop but frequently show beneficial effects on succeeding crops for two or three years. Top dressings of suitable manure will increase the yield of hay, and there is probably no better crop than grass on which to apply it. A great deal of grass and clover seed is wasted every year from seeding on sour or acid soils. Applications of lime correct this condition, and should be made particularly where legumes are to be grown.

Copies of the bulletin may be had upon request of the department at Washington, D. C.

NEW BREEDS OF LIVE STOCK BEING ESTABLISHED IN WEST

The United States Department of Agriculture is developing types of live stock believed to be more useful than some now represented by present breeds, says a report just issued by the Bureau of Animal Industry.

"Range sheep breeding conducted in Clark County, Idaho, is resulting in a type which has become so fixed as to warrant its classification as a breed. These sheep, known as Columbia sheep, are particularly adapted to range conditions and are believed to be profitable both for mutton and for wool production.

"A new type of American utility horse is rapidly being established, in cooperation with the State, at Buffalo, Wyo. Characteristics of the type—possibly entitled to the term 'breed'—are activity, strength, endurance, and reasonable speed. The horses are believed to meet a demand for general farm and ranch work, delivery purposes, and for certain classes of military service.

"Poultry breeding at the bureau farm, Beltsville, Md., shows progress in the establishment of a new breed of fowl. Certain characteristics, such as white plumage and yellow legs and skin, are now well fixed, but there is still considerable variation in the type and in color of eggs. The birds developed this year show improvement over those of a year ago."

Losses by Angoumois Moth Unnecessary—Proper Handling of Grain Checks Injury

Heavy losses due to the Angoumois grain moth are unnecessary. They are greatly reduced by prompt harvesting, early threshing or husking, and proper storage, according to Farmers' Bulletin 1156, Angoumois Grain Moth, recently published by the United States Department of Agriculture.

Attacks All Cereals.

The Angoumois grain moth, primarily a pest of corn and wheat, attacks all cereal grains, particularly throughout the Southern States, according to the bulletin. Seldom is it injurious north of central New Jersey, except in cereals in storage. It is second to the rice or black weevil in its ability to damage grain. Entire crops of corn and wheat often are ruined, and millers are known to have refused to buy badly affected crops, as flour made from damaged wheat is not fit to eat. Wheat loses through moth attack about 52 per cent in weight. Corn, being larger, loses from 12 to 14 per cent in weight when kernels are attacked by a single insect only. As many as three or four moths, however, may develop in one corn kernel. The feeding of a single insect will completely ruin so small a grain as milo or sorghum.

In the early days of American history there was no Federal horticultural board to protect the Nation's agriculture from foreign pests, and the Angoumois grain moth, with many other unwelcome pests, slipped into this country in the seed brought from Europe. As early as 1728 it was reported to be causing damage to wheat in North Carolina. It is a pest which is easily carried in grain, so it spread rapidly through the Southern States and would have become a serious menace in the North if it were not for the fact that it is easily killed by severely cold weather.

Injuries to grain always occur when the moth is in the larval state. It is difficult to detect the damage in the earlier stages, for the grub or weevil bores its way into the seed when it is so small that the hole by which it enters can not be found without inspection with a microscope. Once within the seed, it eats out the interior. Usually the first indication to the average grower that his grain has become infested is the simultaneous appearance of the moths and round holes that appear in the individual kernels, or sometimes by the heating of the grain in the bin.

Delay Permits Infestation.

If wheat is cut as soon as ripe, threshed as soon as dry, and placed at once in storage in deep bins where only a relatively small surface of the grain is exposed, the moth will not ordinarily cause trouble. The relatively small amount of wheat that is infested by the time it is ripe and can be threshed is not sufficiently large to cause heating in the bins as a result of moth infestation. If grain is badly infested, it should be fanned or screened. This, however, removes only the adult moths. To kill those which remain, fumigation or heating is necessary. The best two fumigants are hydrocyanic-acid gas and carbon disulphid. The former is lighter than air, very deadly to man as well as insects. It kills the moth in stored unthreshed grain. Carbon disulphid should be used for threshed grain in bulk. This gas is heavier than air and will kill the moths in grain stored in air-tight bins or rooms. The average farmer is not equipped to use heat in controlling the moth, but millers and grain dealers who have dryers can heat the grain to 120° F., which will kill the pest and not injure the germinating power of the seed.

All farmers can support campaigns to kill out the Angoumois grain moth. No pest can be controlled more effectively. If county agents will unite the farmers to fight this pest, they will save grain worth many times the salary paid them, says the bulletin.

Weekly News Letter

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John L. Cobbs, Jr., Chief

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509,084 SQUARE MILES FREED FROM CATTLE-FEVER SCOURGE

Areas aggregating 50,555 square miles, formerly infested with cattle-fever ticks, were released from Federal quarantine last year by the United States Department of Agriculture. The total area freed from ticks since the beginning of the work in 1906 is 509,084 square miles, or 70 per cent of the area originally infested. The work is progressing also in additional territory.

Following the eradication of cattle-fever ticks well-bred stock may be safely introduced; in fact, regions of the South now removed from quarantine are raising and marketing excellent cattle, say department specialists.

1,392,369 POUNDS OF BUTTER FOR NAVY MAKES HIGH SCORE

During the season of 1919, 1,392,369 pounds of butter, made for the Navy, at 43 creameries, was passed on by 29 inspectors of the Dairy Division of the United States Department of Agriculture. The average score for all samples of the butter taken at the time of manufacture was 95; the average score after storage was 92.71. The specifications require that the butter be made from sweet cream. The excellent keeping qualities of this butter are shown by the high quality of the butter on rescoring after six months. There was none of the metallic or the fishy flavor so common in storage butter. One of the outstanding results of this work is the demonstration to small creameries that with a little effort a much better quality of cream can be obtained and a correspondingly higher quality of butter manufactured. The lessons learned in the manufacturing of high-grade butter for the Navy have made it possible for creameries that previously produced inferior butter to obtain a better product and an increased price throughout the year.

LAMB PRODUCTION INCREASED BY MORE LIBERAL FEEDING

Specialized sheep farming, in which forage crops were used for the summer pasture, and a study of the relation of nutrition of ewes at breeding time to the percentage of lambs produced were included in the experimental work conducted last year by the United States Department of Agriculture at the Government farms at Beltsville, Md., and Middlebury, Vt.

Data were obtained relative to the comparative relish with which sheep ate different forage crops and the gains made while pasturing upon them. It was demonstrated that with the frequent rotation necessary in pasturing forage crops, sheep could be successfully raised without danger of infestation by stomach worms or other internal parasites. Experiments in the last four years to test the effect of feed at breeding time upon the size of the lamb crop have shown an increase of 18.8 per cent of lambs produced by increased nutrition of ewes during mating season for both Beltsville and Middlebury. This is an increase of 25.9 per cent in the Beltsville flock and 8.55 per cent in the Middlebury flock.

In experiments with 120 western ewes at the Middlebury farm to test the effect of running sheep in permanent pasture upon the growth of weeds, and the carrying capacity of the fields, it has been demonstrated that sheep are beneficial in cleaning pastures of weeds, but that it must be accomplished gradually and should not be overemphasized as a reason for engaging in sheep raising.

MARKED GROWTH IN DAIRYING SHOWN IN SOUTHERN STATES

In the Southern States the work conducted by the Dairy Division, United States Department of Agriculture, to promote dairying and the consumption of dairy products has shown marked results. The efforts last year were directed largely toward increasing the use of milk and dairy products on the farm through campaigns for cows on every farm, and improving farm dairy products by practical demonstrations in schools and in farm kitchens. In Louisiana 274 cottage-cheese demonstrations, 207 butter-making demonstrations, and 236 demonstrations on milk products were made, and 26 meetings were held. As a result, 2,698 families were reported as using more milk, 178 cows were brought in where there were none before, 34 boys' and girls' clubs were organized, and much improved dairy apparatus was purchased.

In South Carolina the activities resulted in the increased use of milk in 1,384 families and in the purchase of 73 family cows. Sixty demonstrations were given in butter making and 38 in making other dairy products. The work in Mississippi resulted in placing 322 family cows in 11 counties and in the purchase of 2,040 pieces of improved dairy equipment. Dairy clubs were organized in 11 counties, 49 meetings were held, and 76 demonstrations were given.

MAINE FARMERS COOPERATE IN BLUEBERRY CANNING PLAN

One of the most important agricultural factors of New England which has been given little attention outside of that immediate section, yet which contributes largely to the farming success of an entire State, is the blueberry crop of Maine, where land for this purpose is estimated by farmers to be worth $1,000 an acre.

Blueberries grow everywhere in Maine with little or no cultivation, for of all places it is the natural blueberry country, producing from 80 to 85 per cent of all of this fruit canned in the United States. In fact, the blueberry crop of Maine was so large last year that the canneries were unable to take care of all business offered to them.

Realizing the necessity for better canning facilities in order properly to handle this important crop, the growers in Machias Valley took steps to organize a blueberry growers' canning association. With the assistance of a representative of the Bureau of Markets, United States Department of Agriculture, interest was created and within two weeks the Machias Valley Cooperative Canning Association was made a reality. It started with a membership of 16 growers and with sufficient capital to justify the immediate erection of a cannery, work upon which will begin at an early date.

It remains to be seen what success the canning association has, but if the enthusiasm and cooperation—prerequisites of any successful cooperative endeavor—are continued, the blueberry growing and canning industry in Maine will enjoy an era of unusual prosperity.

CHEAPER FERTILIZER FOR THE FARMERS

By Dr. Milton Whitney, Chief, Bureau of Soils, United States Department of Agriculture.

Cheap and abundant fertilizer has long been the dream of the farmer, orchardist, and truck gardener. A step toward its attainment has been taken by the Bureau of Soils, United States Department of Agriculture, in solving the problem of extracting phosphoric acid, one of the three constituents most commonly used in commercial fertilizers, from phosphate rock by a method much cheaper and more efficient than the commonly used sulphuric-acid process. This new method in which mixtures of phosphate rock, sand, and coke are heated to a smelting temperature in a fuel-fed furnace may revolutionize the fertilizer industry of the world.

In the United States the phosphate used for fertilizer comes largely from the deposits of rock in Florida. The established method of producing a soluble phosphate is to treat the rock with sulphuric acid. By this method the acid phosphate contains only one-half the percentage of phosphoric acid that is contained in the rock from which it was derived. Commercial acid phosphate, for instance, made from 32 per cent rock contains only 16 per cent of phosphoric acid. Oftentimes the process results in the loss of two-thirds of the rock.

New Process Saves Waste.

With a view to saving this immense waste of phosphate, the Bureau of Soils undertook to evolve a new process whereby phosphoric acid could be freed by using a high degree of heat. The first work was done in an electric furnace, but it soon became evident that this process would be prohibitively expensive except in localities where electric power could be obtained at a very low cost. The department, therefore, turned its attention to the possibilities of using crude oil, which is the cheapest fuel obtainable in the vicinity of the large phosphate rock deposits of Florida, and the experiments indicate that phosphoric acid can be extracted more cheaply in an oil-burning furnace than by the old sulphuric-acid process.

For the purpose of keeping the fuel in direct contact with the rock material and for convenience in handling, the material is briquetted with coke and sand at the experimental plant at Arlington, Va. By this means the coke material is kept within the mass and is retained until the reaction is well started. Sand or silica is necessary to bring about the chemical reactions in this process and it is largely present as an impurity in the Florida phosphate deposits, together with a clayey ingredient, which acts as an excellent binder in making the briquettes. Thus the very impurities which made rock objectionable under the old process are turned into an asset.

Practical Value of New Development.

In the experimental runs at Arlington the practical value of the new development is indicated by the fact that a 64 per cent phosphoric acid was recovered from the rock as against the 16 per cent product originally obtained by the sulphuric-acid process. By passing ammonia gas into this phosphoric acid, solid ammonium phosphate, a very concentrated material containing two valuable fertilizer ingredients, results which can stand heavy transportation and handling changes. It is also practical to mix the phosphoric acid with phosphate rock so as to give a product similar in its properties to original 16 per cent acid phosphate and which would be convenient to handle. The difference between a 50 per cent product and a 16 per cent product means an immense saving in freight charges.

While it is difficult to estimate with accuracy the actual cost of the new process it has been found that the consumption of fuel was only about 15 per cent of the value of the product while with the sulphuric-acid process the cost of the acid used seldom runs below 22 per cent.

PREVENT SPREAD OF CORN BORER.

Although the corn borer, a dangerous enemy of corn, is confined in this country, as far as is known, to New England, New York, and a township in Pennsylvania, everything possible must be done to prevent its spread to the great corn belt of the Middle West, declares the Secretary of Agriculture in his annual report to the President. Two infested areas, the Secretary states, have been discovered recently in Ontario, Canada, one of them just across the lake from Buffalo and the other extending for 50 miles in either direction from St. Thomas.

These areas, comprising approximately 12,000 square miles, constitute what is probably the worst infestation that exists in North America at the present time.

The officials of the Bureau of Entomology and the Federal Horticultural Board, according to the Secretary's report, have been in consultation with the Canadian entomologists and will cooperate with them, so far as possible under existing law, in their efforts to prevent the spread of the insect into the United States at points far removed from the present infestation in this country.

TWO GRAPEVINE MARAUDERS OPERATE UNDER SAME NAME

As a vineyard pest, the grapevine flea-beetle is one of the most dangerous, best known, and most widely distributed of all the insect enemies of the grape. The beetle is extremely voracious, and causes destruction in the early spring by eating out the centers of the swelling buds. Few other insect enemies of the grape have so many complaints lodged against it at the Bureau of Entomology, United States Department of Agriculture, as the grapevine flea-beetle.

American entomological literature is filled with studies of this beetle, and it has always been assumed that the insect produced two broods each year — the beetles of the second brood being smaller than those of the first and less destructive. The Bureau of Entomology has completed the study of the flea-beetle, and the results are published in Department Bulletin 901. Two distinct species of the beetle, it was found, have been masquerading under the same name (*Altica chalybea* Ill.). The smaller beetle, hitherto supposed to be the dwarfed second brood, is, in reality, a different species, which emerges later than the larger insect. The new species is described as *Altica woodsi*.

The distinction of the two species will have an important effect upon the control measures. Both beetles feed destructively upon the leaf tissues of the grape and both are highly resistant to poisonous sprays. Usually their appearance in the vineyard is limited to a small area—at the ends of rows, or at the edge of the field—and, under such conditions, they are best removed by picking. The work must be done quickly, as the beetles eat their way along the leaf very rapidly. When the infestation is severe and picking inadvisable, a solution of 6 pounds of arsenate of lead, paste, or 3 pounds, powdered, to 50 gallons of water may be used effectively. Vigilance in the early spring is essential.

Milk-Production Costs Relatively High in New Orleans District, Inquiry Reveals

It cost dairymen in the New Orleans district $5.57, on the average, to produce 100 pounds of milk during the winter period of six months in 1919–20. For the summer period of six months in 1919 the average cost was $3.51. For the winter of 1918–19 and the summer of 1918 the average cost of production was $4.97 and $2.91, respectively.

These figures were announced by the United States Department of Agriculture to-day as the result of a two-year study in the Louisiana district. The report shows that the cost of producing 100 pounds of milk varied greatly among different herds. The greatest difference occurred during the second winter, when one dairyman produced milk at a cost of $3.22 per hundred pounds, while another dairyman had a cost of $6.96.

Realizing that average figures do not always indicate the cost of producing the bulk of the milk in a given district, the department also reports figures showing the cost of various quantities of the entire volume. For instance, these studies show that during the first winter 4.7 per cent of the milk was produced at a cost not exceeding $3.65 a hundred pounds, while 75.8 per cent of the total volume cost within $5.34 a hundred pounds. In one of the herds the cost exceeded $6.

Producing 100 Pounds of Milk.

The average requirements for producing 100 pounds of milk during the two winter periods were found to be as follows: 72.4 pounds of grain; 38.3 pounds of hay and other dry roughage; 78.4 pounds of silage and other succulent roughage; 0.3 of a pound of bedding; 15.5 cents for pasture; 9.5 cents for hauling and grinding grain; 5.8 hours of labor; 0.9 of an hour of horse labor; and $1.22 for other costs such as interest, taxes, insurance, and depreciation of buildings, equipment, and live stock, cost of keeping the bull, and miscellaneous items. The requirements — so far as possible — are stated in terms of pounds, hours, or other quantities instead of in terms of money in order that they may serve as a basis for calculating costs under varying prices.

The items expended for producing 100 pounds of milk were less in summer, as the following figures show: grain, 52.5 pounds; hay and other dry roughage, 1.9 pounds; silage and other succulent roughage, 8.1 pounds; labor, 5 hours; horse labor, 0.7 of an hour; pasture, 19.7 cents; hauling and grinding grain, 5 cents; other costs, 80.3 cents.

For each 100 pounds of milk produced in winter there was a credit of 0.033 of one calf and 127.7 pounds of manure. The corresponding credits for summer were 0.023 of one calf and 78.2 pounds of manure.

Discusses Dairy Methods.

The study brought out a number of interesting facts regarding dairy methods used in this section. It was found, for instance, that compared with other milk-producing sections of the country the quantity of grain fed during the six months' winter period was very large; also that the quantity of roughage was unusually small; and the production of the cows was remarkably low; in fact, considerably below the average for the whole United States. During the first year the 17 herds studied had a total of 452 cows, with an average yearly production of only 2,994 pounds of milk testing 4.6 per cent butter fat. The next year 440.6 cows had an average yearly production of 3,263 pounds of milk testing 4.2 per cent butter fat. The presence of the cattle tick, the report says, has been a handicap to dairymen in this section. The tick has prevented native stock from producing as much as it is capable of producing. It has also hindered the introduction of better stock from tick-free sections.

Cost at or below which approximately 25, 50, 75, and 100 per cent of the volume of milk was produced.

Cost of producing 100 pounds of milk.	Cumulative per cent of milk produced.	Cost of producing 100 pounds of milk.	Cumulative per cent of milk produced
Winter period of 6 months 1918–19.		Winter period of 6 months 1919–20.	
	Per cent.		*Per cent.*
$3.65	4.7	$3.22	8.4
4.31	28.4	4.75	23.2
4.63	45.2	5.46	50.4
4.97	Average cost.	5.57	Average cost.
5.34	75.8	6.49	72.8
6.55	100.0	6.96	100.0
Summer period of 6 months 1918.		Summer period of 6 months 1919.	
$2.07	4.4	$2.02	7.0
2.42	24.8	2.93	24.3
2.91	Average cost.	3.51	Average cost.
3.02	48.8	3.62	57.3
3.36	78.0	3.99	76.6
4.47	100.0	4.98	100.0

CLEANING UP INSECT PESTS.

Much can be done now to reduce the possibility of insect plagues next summer if a little effort is directed toward the destruction of insect shelter areas. Around the grounds and gardens, under hedges, beside ditches, and in fence corners are bunches of insect-sheltering weeds or grass. By the time cold weather approaches many kinds of insects in the adult or immature stages have taken full advantage of these nooks and hidden away there for the winter. The Bureau of Entomology, United States Department of Agriculture, says that if these spots are cleaned up and the refuse cut and burned, many of these hibernating insects will be destroyed and the damage from such pests during the coming season will be materially lessened.

BULL ASSOCIATIONS SHOW BIG MEMBERSHIP INCREASE

The number of active bull associations increased from 78 on July 1, 1919, to 123 on June 30, 1920. This is the largest increase since the work was begun by the United States Department of Agriculture, and is partly due to the momentum gained during the preceding year, when the first real effort was made to extend the work.

Eighteen of the new associations are in South Carolina, Alabama, and Mississippi, where a large part of the active field work has been done by the cooperative extension men. Reports from the associations which have been in operation for a fairly long time show that the bull association is fulfilling its purpose of improving the herds and that the daughters of association bulls have generally excelled their dams in milk and butter-fat production. In one Maryland association 21 daughters of association bulls excelled their dams in yearly production by an average of 963 pounds of milk and 44 pounds of butter fat.

CHEESE MAKING IN SOUTH BIG FACTOR IN DAIRY INDUSTRY

In the South, particularly in North Carolina and Tennessee, the cheese industry is becoming a noteworthy factor in dairying, following the introduction of successful methods of cheese making developed by the United States Department of Agriculture. In each of these States two new factories were established during last year with the help of the Dairy Division specialists of the department.

The Grove City Creamery, Grove City, Pa., conducted under the direction of the Dairy Division, continues to manufacture foreign types of cheese by methods developed in the laboratory of that division. The production of Roquefort, Swiss, and Camembert cheese during the year exceeded 130,000 pounds.

Piano Box or Packing Case May Be Used to Shelter Back-Yard Poultry Flock

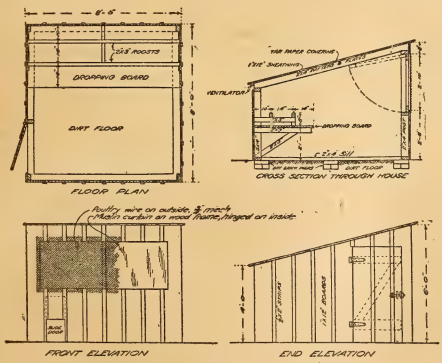
Piano and packing boxes can be successfully converted into adequate back-yard poultry houses, but many owners of small flocks prefer a building erected especially for the purpose, because it usually presents a better appearance in the back yard. For such, poultry specialists of the United States Department of Agriculture suggest plans for a poultry house of the shed or slope-roof type that will make a small flock comfortable and be neat in appearance.

This building is 8 by 8 feet square, and is 6 feet high in front and 4 feet high in the rear. The house may be made higher with little extra cost and would be more convenient to work in. The ventilator in the rear is not needed in the northern part of the country. The roof is covered with roofing paper. The same material may be used on the sides or, if desired, the cracks may be covered with wooden strips 3 inches wide. Such a house is large enough for a flock of 20 hens.

Dry Floor a Necessity.

If the soil is well drained and remains dry no floor need be used in the house. Often a slight dampness can be corrected by filling up the floor several inches above the outside ground with sand, gravel, or dry dirt. Three or four inches of the surface of the floor should be removed and replaced with fresh earth once or twice a year. The run should be spaded up at least once a year. If the ground is so wet or damp that this condition can not be corrected by filling, it is best to provide a board floor, as this will help to keep the house dry, will allow easier cleaning, and will promote the general health and welfare of the hens. A house with a board floor should be set on posts or blocks, so that it is 5 to 12 inches above the ground. When this space is left the floor will not rot so quickly and rats will not be so likely to take refuge under the house.

The dropping boards and roosts should be placed against the back wall. Here they are out of the way and also are least likely to be reached by drafts. The dropping boards should be about 20 to 30 inches from the floor, depending on the height of the building. This gives space enough under them so that the hens have room to exercise and is not too high for the heavier hens to fly up to. The roosts should be 3 or 4 inches above the dropping boards. If more than a single roost is used, they should be on the same level; otherwise all the hens will try to crowd upon the highest roost. A piece of 2 by 4 or 2 by 3, laid on edge and with the upper corners rounded off, makes a good roost. A pole, or even a piece of board 2 or 3 inches wide, may be used. If the roost is of light material and fairly long, it should be supported in the center, as well as at the ends, to prevent it from sagging badly. An allowance of 7 to 10 inches of roost space per fowl, according to the size of the birds, should be made. If more than one roost is used, they should be placed about 15 inches apart.



Plan of a Simple Back-Yard Poultry House.

Nests must be provided and may be very simple. Any box about 1 foot square and 5 or 6 inches deep is suitable. An ordinary orange box with the partition in the middle serves very well, each box forming two nests. The top is removed, the box laid on its side, and a strip 3 to 4 inches wide nailed across the lower front. Nests can be fastened against the walls of the house or set on the floor. It is preferable to fasten them against the wall; as they take too much floor space if set on the floor. One nest should be provided for each 4 or 5 hens.

Effect on Future Crops Makes Cowpeas Popular Soil Improver

The ease with which cowpeas are grown and their marked effect on succeeding crops have made them one of the most popular crops grown for soil improvement, according to Farmers' Bulletin 1153, Cowpeas: Utilization, just published by the United States Department of Agriculture. Besides increasing the productiveness of the soil, the bulletin says, the cowpea also improves its general physical condition, making heavy clay soils more open and sandy soils more compact. The cowpea has the distinct advantage of making a good growth on soils which will not produce profitable yields of other legumes or cereals. It is an excellent green-manure crop for vineyards and orchards.

Except on the poorer soils, results indicate that it is decidedly more profitable to utilize the cowpea as hay or pasture and then plow under the stubble than it is to plow under the entire crop. About 85 per cent of the fertilizing and soil-improving value of the cowpea is contained in the hay and about 15 per cent in the roots and stubble. Feeding experiments indicate that much of the fertilizing value of feeds is recovered in the manure. It is possible, therefore, to obtain the feeding value of the cowpea as hay or pasture, and, in returning the manure to the soil, to save a large part of the fertilizing value, provided the manure is well handled. When the entire crop is plowed under, a more beneficial and lasting effect is obtained, but this advantage is not sufficiently great to equal the feeding value of the cowpea.

Light or sandy soils that have been cropped for a long time and need humus receive greater benefit from plowing under the whole crop. When, therefore, the improvement of the land is the sole object, the entire crop should be plowed

under to obtain the greatest value. In utilizing the entire crop for soil improvement, it is best to plow it under when green, before being killed by frost. The green plants decay more readily and are superior to dry plants in their fertilizing effect.

The results of analyses made by the North Carolina Agricultural Experiment Station show that 1 ton of cowpea hay contains 47 pounds of nitrogen, 10 pounds of phosphoric acid, and 29 pounds of potash, says the bulletin.

22,063,290 CATTLE OFFICIALLY EXAMINED DURING LAST YEAR

In the course of supervising the interstate transportation of live stock to prevent the spread of animal diseases United States Department of Agriculture specialists at market centers during the last fiscal year inspected 22,063,290 cattle, of which 24,628 were dipped under the department's supervision, so they might continue in interstate commerce. Sheep to the number of 23,472,528 also were inspected for communicable diseases, and of these 2,744,481 were dipped to comply with the regulations of the department or of the States of destination. Swine inspected numbered 39,754,970, and 574,558 of these were vaccinated against hog cholera for distribution as feeding or breeding animals.

Upon request of transportation companies and shippers or to comply with laws of States to which shipments were destined, department veterinarians inspected 36,393 horses and mules, of which 23,742 were tested with mallein, 5 showing reactions.

GRAZING PRINCIPAL RETURN FROM NATIONAL FORESTS

Grazing at present is the principal source of money return to the Government from the National Forests, says the Secretary of Agriculture in his annual report to the President. He continues:

"Since 1915 the grazing fees have been doubled, with the view of making them commensurate with current rental rates for neighboring private lands of the same character. When the existing rates were established the users of the range understood that they would remain in effect for five years, and many of the grazing permits were issued for this period. The value of the grazing privilege on many ranges subsequently advanced, and a considerable sentiment in favor of an immediate further increase in the fees developed. The good faith of the Government would be impaired by such a course. Furthermore, to advance the fees at the present time would add to the instability of the national forest live-stock industry which has been brought about by existing market conditions, and would be neither just nor good public policy.

"No policy has been laid down by the Congress for the guidance of the department in the exercise of the administrative discretion, with which it has been vested for 15 years, to determine the conditions under which the use of the range may be permitted. If the Congress desires to prescribe such a policy, it should not take effect until after 1923, when the existing leases will expire. Even in the absence of legislation, the department will make a classification of the ranges and fix a new scale of charges, to be imposed in 1924, under which the fees will represent the actual grazing value of the particular portion of the range used by each permittee or group of permittees. Before the new scale is determined, an opportunity will be given the local associations of national forest range users to submit any data regarding the fairness of the proposed fees which they may desire to present."

RAPID PROGRESS BEING MADE IN CATTLE TUBERCULOSIS WAR

Conspicuous among the efforts of the United States Department of Agriculture to suppress animal diseases during the past year has been the excellent progress in tuberculosis eradication. The accredited-herd plan, under which cattle passing a series of official tests receive appropriate recognition, has met with general support from live-stock owners and State sanitary officials. During the fiscal year ended June 30, 1920, a total of 695,364 cattle were tested. Of these, 28,616 reacted and were removed. The number of accredited herds at the end of the year was approximately three times as large as on June 30, 1919. The records show also that in addition to fully accredited herds, 16,599 other herds containing 257,577 cattle have passed the first official test, no reactors being found. Public interest in the accredited-herd activities and the enthusiasm with which cattle owners are cooperating are shown by the number of applications for testing. The waiting list at times has included nearly 5,000 herds.

A noteworthy development in tuberculosis eradication is the tendency to free from the disease areas containing many farms. During the year Clay County, Miss., Island County, Wash., and Clatsop County, Oreg., made complete tuberculin tests of all cattle within their boundaries. The eradication of tuberculosis should proceed even more rapidly than in the past, when it is taken upon the area basis.

RINDERPEST CAUSING HAVOC IN CATTLE HERDS OF EUROPE

(*Continued from page 1.*)

these animals can be imported into the United States from countries across seas without a permit from the Secretary of Agriculture, and permits are not issued for importations from countries in which rinderpest exists. This eliminates the chief source of danger.

Under regulations issued jointly by the Department of Agriculture and the Treasury Department, importation into the United States of any animal by-products taken or removed from animals affected with anthrax, foot-and-mouth disease, or rinderpest is prohibited. Hides of meat cattle, calfskins, buffalo hides, sheepskins, goatskins, and deerskins offered for entry into the United States must be subjected to disinfection in an approved manner, unless it can be shown that rinderpest does not exist in the locality where the shipment originated. Thus every possible effort is being made to protect the live stock of the United States from cattle plague of the Old World.

$94,791 IN RETURNS EARNED BY BOYS' AND GIRLS' CLUBS

Supervision of boys' and girls' poultry clubs by the United States Department of Agriculture, in cooperation with State agricultural colleges, was continued during the last fiscal year in seven States, where there were 1,186 clubs with 29,180 members, of whom 12,786 made reports from which the following totals have been compiled: Eggs set, 731,709; chicks hatched, 510,478; value of products sold, $94,791.32; value of stock on hand, $382,277.37; exhibits held, 712; members exhibiting, 5,615; prizes received, $9,681.11. A feature of progress was the improvement in quality of fowls bred by club members. In numerous instances the boys and girls won prizes in open competitition with older and established breeders.

Under favorable conditions cowpeas after being cut for hay will sprout again from the base. Considerable pasturage or even a second crop of hay or seed is sometimes produced, especially in the Gulf coast region, if good moisture conditions follow the first cutting. Ordinarily, however, but a single cutting can be obtained.

Weekly News Letter

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WIDELY FAMOUS CUSTER WOLF HITS THE LONG, LONG TRAIL

Government Hunter Finally Outwits Marauder After Thrilling Chase.

Death Ends Nine-Year Reign of Dread that Cost Steckmen in Vicinity of Custer, S. Dak., $25,000 in Live Stock Killed or Mutilated.

"The Custer Wolf is dead."

He was the master criminal of the animal world.

Throughout the region around Custer, S. Dak., that day, the telephone lines were busier than they were on the day the armistice was signed.

For nine years this wolf had lived as an outlaw—the cruelest, the most sagacious, the most successful animal outlaw that the range country had ever known. His cruelty was surpassed only by his cunning. He killed with the refinement of animal ferocity. Here to-night—tomorrow night he devastated a range half a hundred miles away.

Showed Uncanny Cunning.

He loped through every kind of danger and spurned them all. He sniffed at the subtlest poison and passed it by. The most adroitly concealed trap was as clear to him as a mirror in the sunshine. Old hunters, unerring shots, drew the bead on him and saw him glide away unharmed. The price on his head was $500. Bounty hunters sought him for profit. Sportsmen put forth every device to slay him for reputation's sake. And still the old wolf went unscathed about his work of destruction.

Credulous people said he was a charmed thing. Others attributed his immunity to a wisdom greater than beast ever before possessed. Still others said he escaped by plain luck—the mysterious thing that adheres to some animals as to some men. In whatever way they explained his uncanny elusiveness, everybody feared him—perhaps not consciously, very rarely openly, but there was no man throughout that region who did not feel a shiver run down between his shoulder blades when, alone or in the dark, he thought of this gray devil of the desert.

All kinds of stories got abroad. This thing, they said, was not a wolf—not merely a wolf. They believed that nature had perpetrated a monstrosity, half wolf and half mountain lion, possessing the craftiness of both and the cruelty of hell. In public opinion he had all the qualities of the Were wolf of Old World legends.

No wonder that the telephones hummed when the word went out that a hunter, sent by the United States Department of Agriculture to protect the live-stock industry, had killed the criminal wolf. That word ended a nine years' reign of dread, during which the stockmen around Custer had paid tribute to this wolf to the extent of $25,000 worth of live stock. And mere money loss was not the whole of the horrible toll he took. When he killed for food he took only the choicest animals, but sometimes he killed in atrocious ways for the mere sake of killing. Often he wounded cattle, breaking their legs, biting off their tails, mutilating them in unspeakable ways.

Four years ago his mate was killed. He never took another and many people

(Continued on page 16.)

KEEP JACK FROM BECOMING DULL.

In order to prevent Jack from becoming a dull boy as a result of all work and no play, many hours can be spent profitably in the schoolroom by forgetting books and lessons for a time and testing seeds. Seed testing is a diversion that is as practical as it is enjoyable. It is admirably adapted for exercise work in every schoolroom whether or not a systematic course in agriculture is given. Little equipment is necessary. A study of samples of farm seed to be sown by the pupils' parents, to determine the percentage of germination and the extent of impurities in the seed, offers a means of connecting the school with the home with benefits to both. Impurity tests can be made by an examination with a magnifying glass. The only apparatus necessary for germination tests of small seed consists of two plates, and a piece of blotting paper. Write to the United States Department of Agriculture for Farmers' Bulletin 428, "Testing Farm Seeds in the Home and in the Rural School." It gives complete directions.

COMMITTEE SUBMITS PLANS FOR AIDING COTTON GROWERS

Cooperation in Production and Marketing Keynote of Report to Association.

Proposes Remedies for Wasteful Conditions and Abuses Found in the Present System of Handling and Marketing Cotton—Thorough Study Made.

As steps toward stabilizing the cotton market and correcting present abuses that generally mean losses to the producers, the American Cotton Association's Committee on Cooperative Marketing, in its report recently made public, recommends cooperation in the uniform production of better varieties of cotton, in the construction and operation of bonded warehouses, and in the handling and selling of cotton through associations. The report was based upon a thorough investigation of the whole cotton situation by the committee, of which D. S. Murph, of the Bureau of Markets, United States Department of Agriculture, was chairman. An introductory letter by Secretary of Agriculture Meredith expresses hearty sympathy with the work under way for solving the problems of American cotton growers.

Abuses in Present System.

Wasteful conditions and abuses in the present system of handling and marketing cotton are discussed in the report. It points out the lack of attention by cotton growers to economical and efficient methods of marketing, the "autumnal dip" in the prices, carelessness in handling, and the wide variation in prices received by farmers for cotton of the same grade on the same day in the same market. Acting as individuals, the report declares, the 2,000,000 cotton growers of the country can not hope to attain economic equality with the buyers. This, however, can be done by the farmers acting together.

In submitting the report to the association, Chairman Murph declared that "uniformity of production of a superior variety in a community gives that com-

munity a better market standing and makes it more attractive to buyers. An adequate system of warehouses for cotton is necessary to protect it from the weather, to afford the growers machinery for securing paper which they may use as collateral in financing their cotton so that they market it in a gradual and orderly manner, and to form operating centers for the marketing associations."

Many of the cooperative features discussed in the report have a bearing upon the handling and marketing of other agricultural products as well.

COUNTY ASSESSORS ASSIST IN COLLECTING FARM STATISTICS

The annual collection of basic agricultural statistics, principally the acreage planted to each crop, by county assessing officers under State laws, is now carried on in 21 States and has been of great benefit. The wide adoption of this plan resulted from the experience during the war emergency, when States like Kansas, with such laws in operation, were able to obtain definite data regarding county food and feed production and supply, while other States suffered great anxiety, inconvenience, and damage from the lack of such knowledge.

The crop reporting service of the Bureau of Crop Estimates, United States Department of Agriculture, has given full assistance and encouragement to this movement, because data secured in this manner furnish the best check yet devised on the accuracy of its estimates and permit an annual revision of any biased or erroneous estimates, instead of allowing inaccuracies to accumulate in the annual forecasts during the 10 years intervening between Federal censuses. It will also permit the issuance by the Bureau of Crop Estimates, monthly, of county and district estimates for important products, which would be unsatisfactory without such an annual check.

It is hoped by department statisticians that such a law will be speedily enacted in every State. The benefits of such full and dependable data concerning the State and each county annually are very great to agricultural producers and to all business interests affected by farm output and purchasing power.

Cowpea seed more than two years old ordinarily has lost much of its viability, say specialists of the United States Department of Agriculture. Good viable seeds are uniformly bright colored, while seeds which have been exposed to moisture or are dead are duller and darker in color.

GOVERNMENT TO APPEAL CASE OF STOCKYARD COMMISSIONS

Attorney General Acts Following Defeat in Kansas City Court.

Injunction Granted Restraining Criminal Proceedings Not to Stop Department's Fight Against Increased Rates Charged for Handling and Selling Live Stock.

The Attorney General of the United States has ordered an appeal to be taken to the United States Circuit Court of Appeals for the Eighth District from a decision of United States District Judge Van Valkenburgh, of Kansas City, restraining the enforcement by criminal proceedings of an order of the Secretary of Agriculture against increased commission rates for the selling and handling of live stock.

The injunction was granted December 31 in the case of the Drumm-Standish Commission Company and other live-stock commission firms against the United States attorney for the western district of Missouri, restraining him from instituting criminal proceedings under section 5 of the Lever Act.

Order Issued Under Lever Act.

The Secretary's order was issued in August, 1920. Under the provisions of the Lever Act and a proclamation by the President, the live-stock commission business is licensed and placed under the supervision of the Secretary of Agriculture. The act authorizes the Secretary to make prima facie findings as to the reasonableness of commissions and to order the discontinuance of any rate found by him to be unreasonable. Willful failure or refusal on the part of the licensee to discontinue a rate in accordance with an order issued under this section of the act is made penal offense.

In July, 1920, the commission men of Kansas City, Mo., put into effect a schedule of increased commission rates for selling and handling live stock, which, upon investigation by the Department of Agriculture, were found to be unjust, unreasonable, discriminatory, and unfair. The Secretary ordered the increased rate discontinued and the previous rate restored. The commission men failed and refused to comply with these orders and instituted injunction suits against the Secretary, United States attorney, and local representative of the Bureau of Markets; for the purpose of preventing the enforcement of the orders. They claimed that the Lever Act was unconstitutional and that the orders of the Secretary of Agriculture were void. On motion of the Government the suit was dismissed as to the Secretary of Agriculture and the local representative of the Bureau of Markets, but the case was retained against the United States attorney. Complainants moved for an injunction against the United States attorney, and the Government moved to dismiss complainants' bill. These motions were argued and submitted to the court last October, and the decision just rendered denies the Government's motion to dismiss the bill, and sustains the complainants' motion for the injunctive relief against the enforcement of the orders of the Secretary.

Holds Orders Invalid.

The court sustained the constitutionality of the Lever Act but held that the orders issued by the Secretary of Agriculture were invalid on the grounds that no hearing had been given to the commission men, and the orders failed to contain a sufficient recital of facts. During the pendency of the suit, commission men have continued to charge the increased rates, but under direction of the court licensed dealers have deposited with the clerk of the court the difference between the old and the new rate. At the time the injunction was granted $148,445.62 had been so deposited. In like proceedings at Omaha, $176,976.55 have been so deposited. In similar cases, at Chicago and East St. Louis, the courts did not order licensees to deposit amounts representing the increase in rates. However, at East St. Louis licensees have voluntarily deposited approximately $85,000 with H. F. Parry, secretary of the Live Stock Exchange. It is understood that this arrangement was made at the request of the licensees in order to avoid confusion in case final decision should go against them.

In granting the injunction the court intimated that it would no longer require the commission men to pay the excess commissions to the clerk.

COMBATING PESTS IN WINTER.

When the orchards have been cleared of apples there is time to go through the near-by woods and hedges and cut the wild cherry trees and bushes which are the bivouacs of the tent caterpillars that raid the orchards in the spring, say specialists of the United States Department of Agriculture. It is a good time to inspect the trees for borers and to put down mice and rabbit guards at the same operation. Trample the grass flat at the tree base to allow a close inspection for sawdust from the borer's operations and then adjust the wire or paper guard to be in place when snow comes.

INSTITUTE OF AGRICULTURE FRAMES IMPORTANT PROGRAM

Methods for Increasing World's Food Production Will Be Undertaken.

Leon M. Estabrook, Who Was a Member of the American Delegation, Gives an Account of the Fifth General Assembly Held Recently at Rome.

More attention to the collection and distribution of the world's agricultural statistics and the working out of methods to increase food production will be undertaken by the International Institute of Agriculture, according to Leon M. Estabrook, Chief of the Bureau of Crop Estimates of the United States Department of Agriculture, who recently returned from Rome, where he attended the fifth general assembly of the institute. The American delegation, of which Mr. Estabrook was a member, placed special emphasis on the collection of world-wide statistics which will give indication of the supply and demand of food products and assist in stabilizing prices. The delegates from Western Europe, realizing the vital need of increasing food production in their own countries, urged the institute to give special attention to ways and means of increasing yields of crops and the production of live stock.

Delegates from America.

In addition to Mr. Estabrook, the American delegation included Harvey J. Sconce, of Illinois, one of the active founders of the American Federation of Farm Bureaus, who represented organized agriculture, and Thomas F. Hunt, dean of the College of Agriculture of the University of California, who, while on his sabbatical leave from the university, is representing this country as permanent delegate to the institute. Mr. Estabrook was able to attend the institute while in western Europe to collect information for the department on the present and prospective supply, market, and distribution of agricultural products.

The representatives of the United States, although few in number, were most active. The American delegation recommended that decennial censuses be taken in all countries, including farm population, number of farms, acreage, yield per acre, total production of crops, and number of live stock. It also insisted that the monthly and annual reports of the institute include more complete international statistics on live stock and meats, as well as production and surplus stocks of other products. These resolutions were approved by the general assembly, and the permanent committee was instructed to bring them to the attention of each adhering country.

Advocated Reorganization.

The American delegation advocated the reorganization of the institute to reduce the number of permanent employees by eliminating the less efficient help, and recommended that higher salaries be paid to the permanent delegates and more efficient members of the staff. This was supported by the delegates from England, Japan, and China, but was opposed by France and other countries of western Europe. The latter were opposed to the proposition partly on the point of order that it was new business and could not be considered before the next general assembly and partly because they are mainly interested in obtaining information on plant diseases and insects, rather than in the collection of statistics.

The importance of closer contact between the institute and farmers' organizations was emphasized. The institute invited the several governments to give graduate students opportunity to take advantage of its international library of agriculture, scientific, economic, and social researches, and to study the farming methods of Europe under the immediate guidance of its own permanent delegate. The creation of scholarships for this purpose was urged.

Both the American and English delegations were handicapped by the fact that French is the official language of the institute, and proposed that both French and English be used at the general assemblies. This question will be decided at the next meeting, which will be held two years hence. In order to keep in touch with the proceedings and take an active part in them, it was necessary for the American delegation to employ an interpreter. This place was filled by Madam Agresti, former secretary of America's first permanent delegate, David Lubin.

Forty-Seven Countries Represented.

Forty-seven countries were represented at the assembly. It was the first one held since May, 1913, the war interrupting meetings for seven years. The organization was taken up during the first two days, after which the assembly was divided into four groups corresponding to the four branches of the work of the institute, namely, administration, international statistics, agricultural information, including improved cultural methods, and means for overcoming insect pests, plant and animal diseases, and farm management, and agricultural economics. Each of the three members of the American delegation were represented on the committees of two or more of these groups. Mr. Estabrook, because of his relation to the Bureau of Crop Estimates, was chosen president of the committee on international statistics.

It was conceded by the general assembly that the United States Department of Agriculture has developed the best statistical service for agriculture in the world, and is achieving many successes, especially in forecasting production, which few other countries have done. Mr. Estabrook attributed the success of his bureau to the high intelligence and earnest cooperation of American farmers.

The International Institute of Agriculture is a clearing house for information on the world's agriculture. The idea was first conceived by David Lubin, a citizen of California, who saw the value of an international clearing house for crop and live-stock statistics which would make available systematically, on the same dates for the entire world, information regarding production, consumption, marketing, and distribution of agricultural commodities. He realized that all prices are based on the world's supply and that no single country could collect all the statistics.

Aided by Italian King.

After soliciting aid from several governments, Lubin obtained an interview with King Victor Emanuel III, of Italy, who looked with favor upon the idea. At his call, representatives from several governments met in Rome in June, 1905. These representatives drew up a statement in the form of a treaty, which created the institute and which was adopted by 55 countries, including the United States. Each country contributes to the support of the institute, the amount appropriated determining the rank or standing of the country at the general assembly. The United States contributes $16,000 annually to the support of the institution, and is one of the five countries in the first rank.

King Emanuel erected a magnificent building in Rome as headquarters for the institute. Each adhering country is represented by a permanent delegate, who has offices in this building. The permanent delegates constitute a board of directors for the institute. A general assembly is held every two years, attended by the permanent delegates and as many other temporary delegates as adhering countries desire to send. The general assembly reviews the work of the institute and outlines new work for the next two years.

David Lubin was the permanent delegate from the United States from the time of the organization of the institute until his death in 1919. At the recent meeting the general assembly passed a

resolution introduced by the British delegation providing that a marble tablet should be placed in the building to perpetuate Mr. Lubin's memory. It also was ordered that the chair in the convention hall occupied by Mr. Lubin since the foundation of the institute should remain unoccupied, and that his name be carved on its back. Dean Hunt responded to this resolution and stated that a life-size portrait of Mr. Lubin would soon be placed in the main building of the United States Department of Agriculture, at Washington.

SHOW WIDE RANGE OF GAINS IN WINTERING EXPERIMENTS

Experiments to determine the most desirable rations and methods for wintering steers were continued last year at Lewisburg, W. Va., by the United States Department of Agriculture, cooperating with the State Agricultural Experiment Station. Sixty 2-year-old steers, averaging 927 pounds in weight, were divided into 6 lots of 10 each and wintered for a period of 128 days, beginning December 23, 1919. The greatest gain—93 pounds—was made by the lot fed on a daily ration of 25 pounds of silage, 5.4 pounds of straw, and 1 pound of cottonseed meal. Other rations and gains were: Silage (40 pounds), gain, 79 pounds; silage (30 pounds) and cottonseed meal (1½ pounds), gain, 67 pounds; silage (25 pounds) and mixed hay (8 pounds), gain, 63 pounds; mixed hay (20 pounds) and ear corn (2 pounds), gain, 25 pounds; silage (30 pounds), gain, 22 pounds.

The steers used in the wintering experiments at Lewisburg were grazed on pasture to determine the effect which the different rations fed and methods of wintering had on subsequent pasture gains.

HINTS FOR SIRUP MAKERS.

The necessity for cleanliness and uniformity in making homemade cane sirup is evidenced by the fact that of 3,000 cans of sirup gathered from various localities, it was found, according to the United States Department of Agriculture, that more than one-third had sugared partially, a few had sugared solid, and the sirup in some was too thin to be classed as sirup. Fifty-odd cans contained sirup that had been made from frozen cane; in one can out of every ten a bee or a wasp was found, while many of the cans contained smaller insects. Careful boiling to exactly the right density and the use of a strainer when the sirup is packed in the can will help to eliminate these difficulties.

Breed Associations Discuss Measures for Winning South American Markets

Only high-class breeding animals should be considered by stockmen in this country for export to South America. Cattle raisers in the South American countries are interested only in individuals of high quality and are willing to pay good prices for them. This point was emphatically impressed upon representatives of breed associations at a conference held January 4 in Chicago.

Meeting Called by Department.

The conference was called by the United States Department of Agriculture for the purpose of submitting reports of the department representatives who have just returned from South America, where a study was made of the possibilities for the purebred live-stock market in those countries. Thirty-two breed associations were represented—most of them by their executive officers. The department was represented by George M. Rommel, chief of the Animal Husbandry Division, who acted as chairman of the conference; E. Z. Russell and L. B. Burk, the department representatives who visited South America; and D. S. Bullock, who is to be stationed at Buenos Aires as Agricultural Trade Commissioner for the department.

Plans and policies for the development of trade with South American stock-raising countries were considered. It was impressed upon the representatives of the breed associations who attended the conference that the United States Department of Agriculture could not insure the quality of breeding animals exported. The authority of the department does not extend beyond inspection for health and it does not seem desirable that it should. Breed associations, on the other hand, have considerable influence in this respect. A committee, of which Mr. Frank W. Harding, of Chicago, was chairman, was appointed to consider this question and submitted the following resolution, which was adopted by the conference:

Resolved, That the live stock registry associations in the United States desire it to be known that they will cooperate and lend their assistance and all information that will enable purchasers of purebred live stock to acquaint themselves with our best types of the breeds, with a view of all pedigreed live stock shipped from the United States to foreign countries being suitable and satisfactory, and, further, that when desired, registry associations will issue a certificate in connection with the export pedigree certificate stating that the assistance and cooperation of the association in the purchase of the animal referred to in the certificate has been given.

Be it further resolved, That the committee appointed by Mr. Rommel refer the foregoing to the general meeting with the recommendation that it be adopted and transmitted to the associations represented at this conference;

Also, that a copy of this resolution be given to Mr. Bullock.

MAP SERIES SHOWS SHIFT OF FARMING INDUSTRIES

Shifting of agricultural industries in the United States from 1840 to 1910 is shown by a series of maps recently prepared by the United States Department of Agriculture from material collected last year. Another series of maps showing shifts of population in the United States during the same period will follow, and other data of historical value is being accumulated for publication. The research in agricultural history has been devoted chiefly to the early development of the sheep, wheat, and cattle industries, and more recently to the development of agriculture in the Northern Great Plains.

The department is making a study of farm practices in cotton growing in various sections of the cotton belt, along the same lines, but more extensive than the study in the growing of wheat, a report of which was published in the Department's Yearbook for 1919. This work will contain the data of the 1920 agricultural census. Geographical studies of farming and live-stock practices also are in progress.

Cowpea hay should be substituted in the Southern States for much of the hay which is now being purchased in the North and West, say specialists of the United States Department of Agriculture. The greater use of this crop for hay and pasturage increases the production of live stock, an essential factor in securing the maximum returns in any system of agriculture. It also aids much in keeping the soil in good tilth and maintaining its productiveness.

Localities well suited to the production of cowpeas will find it highly profitable to grow seed on a large scale, especially if the best machinery for handling the crop is used, say specialists of the United States Department of Agriculture.

Rejections of Tea Offered for Import Drop to Low Mark, Year's Report Shows

The rejections of tea offered for import were smaller for the last fiscal year than for any of the seven preceding years, according to the annual report of George F. Mitchell, supervising tea examiner, United States Department of Agriculture. The total rejections amounted to only 145,246 pounds, of which 1,592 pounds was barred because of impurities chiefly due to artificial color. The remaining 143,654 pounds was not equal to the Government standards of quality.

War Importations Large.

The rejections amounted to only 0.15 per cent of the 96,868,858 pounds of tea imported during the year. Although the amount imported was smaller than for any year since 1913, this does not, in the opinion of the supervising tea examiner, necessarily indicate any decrease in consumption of tea in the United States. It is more likely due to the fact that during the war importations of tea were above normal in anticipation of possible embargoes or import duties on tea. Large quantities were carried over into 1920 from the previous year.

According to the report of the tea examiner, the low percentage of rejections for the year was due to several causes, the most important being that little, if any, teas that were intended for manufacturing purposes were entered for human consumption.

In former years, such teas frequently were entered for human consumption with the hope that they would pass the Government inspection and thereby escape the 1 per cent tax placed on teas for manufacturing purposes. It was estimated that 65 per cent of the rejections for the fiscal year 1919 were teas that should have been entered for manufacturing purposes in the beginning, and that were so entered after having been rejected as unsuitable for human consumption.

The kinds of tea imported during the last fiscal year were as follows:

Green, 34,756,779 pounds; Oolong, 15,390,546 pounds; black, 46,715,530 pounds; total, 96,862,858 pounds.

The teas came from the following countries: Ceylon and India, 38,609,142 pounds; China, 12,985,490 pounds; Japan and Formosa, 39,134,952 pounds; Dutch East Indies (Java and Sumatra), 6,133,274 pounds.

Transferred to Agriculture.

The report of the supervising examiner was issued by the Treasury Department, since the work was formerly performed under the supervision of that department. On July 1, 1920, the Tea Inspection Service and the staff of tea examiners were transferred to the Department of Agriculture. Copies of the report of the supervising tea examiner can be obtained upon application to the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

FLORIDA RANGES PRODUCING BETTER GRADE OF CATTLE

As a result of a study of beef cattle production on the ranges of Florida, it was found by the United States Department of Agriculture that in Palm Beach County approximately 12½ acres appear to be required to carry an animal through the year. It also was learned that a calf crop of 50 to 60 per cent may be expected annually; rapid improvement of the native stock can be made by the use of purebred bulls; the mortality is no higher on these ranges than on the western ranges; the use of nitrogenous concentrates in connection with winter grazing offers the most practicable solution of the winter-feeding problem; utilization of the native grasses with the object of gradually improving the pastures may be considered one of the chief problems.

It appears that the ranges can best be utilized in units of considerable size; 10,000 acres has been taken as a convenient unit on which to base estimates. There is great need for further investigational work on range problems in connection with large operations, not only in Florida, but in the entire Coastal Plain area, the specialists say.

CITRUS FRUIT FUMIGATION SAFEST BELOW 80 DEGREES

While it has long been known that the presence of light during fumigation of citrus fruit with hydrocyanic acid is one of the factors which cause injury to both fruit and foliage, it has not been known that light before and after fumigation has a similar effect. This fact has been disclosed by recent tests conducted in California by specialists of the United States Department of Agriculture, who have made a report of the experiments, with suggestions for preventing injury, in Department Bulletin 907, Fumigation of Citrus Plants with Hydrocyanic Acid: Conditions Influencing Injury.

Moisture and temperature, as well as light, influence fumigation injury, and experiments show that fumigation is more safely performed at temperatures below 80° F. It has long been known that citrus trees are less liable to injury from hydrocyanic acid gas fumigation when treated at night. The bulletin points out that, in order to prevent injury due to sunlight, diffused light or darkness both before and after fumigation is desirable.

Sunshine fumigation can be conducted with safety, the department's specialists say, only by proper regulation of the amount of gas used and length of exposure. Moisture on citrus plants does not increase the degree of injury and an application of cold water on plants in hot sunshine immediately prior to fumigation appears to reduce slightly the effect of the gas. Sudden changes of temperature over a wide range during exposure tend greatly to increase plant injury. Trees in wet soil are likely to be more severely injured than healthy trees in dry soil. Therefore, irrigation should follow rather than precede fumigation, according to the bulletin.

MEN AS WELL AS WOMEN CAN HELP REDUCE CLOTHING COST

Men as well as women can help reduce the high cost of clothing. A little care on the part of the wearer will do much to preserve clothing already on hand, and thus eliminate the necessity of spending large sums frequently to replenish the wardrobe. This is brought out in a recent publication of the United States Department of Agriculture, Farmers' Bulletin 1089, Selection and Care of Clothing.

Immediate attention to rips, sewing on loosened buttons and hooks, reworking worn buttonholes, and "preventive" darning are recommended as means of prolonging the life of a garment. The latter repair measure consists of reinforcing a worn place with rows of fine stitches or by laying a piece of cloth under it and darning it down with ravelings of the material. The heels and toes of stockings and socks especially may be treated this way before a hole is entirely worn through. Shortening sleeves or trousers a little to do away with a worn edge, or putting new cuffs and collar or new trimmings on a dress may often add months to the life of a garment.

Black Walnut Is Regaining Popularity Of Last Century as a Cabinet Wood

Black walnut, which in the latter part of the nineteenth century was displaced by oak as a favorite cabinet wood, has returned to popularity. This beautiful wood, with its wonderful figured effects, is especially adapted to the dignified designs used in the lighter and more attractive finishes now in common use.

Besides its appearance, black walnut has other qualities which make it particularly good for furniture manufacture, according to the Forest Service, United States Department of Agriculture. These qualities are set forth in Department Bulletin 909, which deals with the utilization of black walnut, its properties, supply, demand, methods of marketing, adaptability for the making of veneer, and other uses.

Adapted for Furniture.

The wood is described as heavy, hard, strong, and stiff. Good "shock-absorbing ability" is specified as one of its valuable qualities for such purposes as furniture. Other good points are that it does not shrink excessively in seasoning, is susceptible of a good polish, and takes stain and other finishes exceedingly well.

In 1918, about 100,000,000 board feet of black walnut was turned out by the sawmills. During the war a tremendous demand for black walnut was created by requirements for gun stocks and airplane material. In consequence, the country was combed to discover black walnut trees. Discovery was made of large supplies which no one supposed were in existence, and trees were utilized that had been considered unfit for commercial purposes.

As a result of this stimulus to production, large stocks were left on hand at the close of the war, much of which was in the form of logs requiring to be turned into manufacture as a salvage measure. Temporarily, the market for black walnut has been depressed by the accumulated supply, but owners of this valuable tree need not be discouraged, the Forest Service states, by the low prices that have resulted from this cause. Standing timber, unlike most crops, can wait for a favorable market without deterioration, and usually is growing while it waits.

Grows on Large Area.

Black walnut trees grow naturally over a large area, extending from southwestern New England to central Nebraska, Kansas, Oklahoma, and Texas. Some regions in this area are unfavorable for its growth, for black walnut thrives best on soil that is rich, moist, and deep, but not wet. It is roughly estimated that in this area there is now standing approximately 821,000,000 board feet. Of the chief commercial regions, that known as the Illinois-Missouri-Iowa region is the most important. The Kentucky-Tennessee-North Carolina region ranks second, and the Ohio-Indiana region third. On the agricultural lands of the latter, walnut seems to reach its best development and has the reputation of being the best so far as the soundness and texture of the wood is concerned.

On account of the scarcity and high cost of walnut logs they generally are utilized very closely. In making veneer the maximum use is obtained of logs that are suitable for the manufacture of this product, for from each board foot of logs 20 square feet of veneer can be made. At present there is a depression in the walnut market along with other woods, but under normal conditions owners can still dispose of their trees to good advantage to lumber manufacturers, and especially to those manufacturers who are equipped to make both veneer and lumber.

MUTTON CURED AND SMOKED AT HOME AS GOOD AS PORK

More mutton would be consumed, the United States Department of Agriculture believes, if farmers realized generally that cured and smoked mutton is as delicious as pork. At present, only 3.9 per cent of the meat used in the United States is lamb or mutton. This is partly due to the fact that there is a popular impression among farmers that after a sheep is slaughtered, the only domestic use for the flesh is eating it while it is fresh. As a consequence, the farmer's family grows very tired of mutton before the carcass is consumed.

For the purpose of finding some way of obviating this difficulty, experimental work in the curing and smoking of mutton has been done recently by the Bureau of Animal Industry of the United States Department of Agriculture. Those who have been doing this work give the following directions for home curing mutton:

The first essential in curing is to be sure that the mutton is thoroughly cooled. The meat should never be frozen, either prior to or during the period of curing. The time to begin curing is when the meat is cooled and still fresh; the proper time is from 24 to 36 hours after killing. Because of the high shrinkage incident to curing, only large pieces, such as the legs and shoulders, are suitable for treatment.

Mutton may be cured by using any good brine formula, but dry-cured meat is better for future use than brine-cured and requires less work. However, danger from rats and other vermin is less in the case of brine-cured meat. Both methods of curing are very successful if care is taken to see that each operation is executed properly.

Following is the method of dry-curing mutton advocated by the United States Department of Agriculture: For each 100 pounds of meat use 7 pounds salt, 3 pounds sugar or sirup, 2 ounces saltpeter, 2 ounces red pepper, and 3 ounces black pepper.

Mix all ingredients thoroughly, then rub the mixture well over the meat and pack it away in a box or on a table. Allow one and one-half days' cure for each pound of meat the pieces average. After the meat is cured hang it in the smokehouse.

POPULARIZING AGRICULTURAL STATISTICS WITH CHARTS

Substantial progress was made during the last fiscal year by the Bureau of Crop Estimates, United States Department of Agriculture, in the preparation by the field statisticians of special articles, charts, maps, and exhibits of various kinds showing the outstanding features of the crop conditions, prospective yields, supply, stocks, and prices. The advantages of presenting agricultural statistics and estimates in these forms are readily seen. While important facts in an article or table may not be generally read or understood, even by persons interested financially, they can be presented by means of charts, maps, graphs, and diagrams, which are really pictures, in striking forms easily understood by the average man. Because of its attractiveness as news matter, such material secures very wide circulation through newspapers, magazines, farm journals, and the like, which are disinclined to print simple statistical tables and text, no matter how important, because statistics are looked upon as dry and not interesting news matter.

The growing use of crop reports, coupled with the fact that the offices of the agricultural statisticians are visited daily by newspaper reporters seeking such news matter, indicates the growing interest in crop estimates.

Spraying Saves Alfalfa from Weevil—Many Times Turns Failure into Success

Alfalfa, that crop upon which thousands of stockmen and dairymen depend for a luxuriant supply of feed, has been threatened in many sections by the ravages of the alfalfa weevil. This pest is responsible for the loss of hundreds of thousands of dollars annually to alfalfa growers in Utah, Idaho, Colorado, and Wyoming. But there is a remedy—a sure one—which seven years of experimental work by the Bureau of Entomology, United States Department of Agriculture, has demonstrated will, when properly applied, as completely destroy the weevil as the weevil, when unmolested, will destroy the alfalfa crop.

The cost of applying the remedy is trifling when compared with the results. It consists in spraying with arsenical solution, the proper application of which is described in Farmers' Bulletin 1185, Spraying for the Alfalfa Weevil, just published by the United States Department of Agriculture.

Tests Prove Successful.

Seldom has any newly recommended method of insect control been so thoroughly safeguarded against failure as alfalfa weevil spraying, say entomologists of the department. Every season for seven years it has been tested and proved successful. During one season field trials were conducted in cooperation with farm bureaus, in the course of which over 4,000 acres were successfully sprayed by practical farmers, many of whom were without experience in any kind of spraying. The Farm Bureau News of Sevier County, Utah, reports a saving of $15,000 by this means, and estimates from other sources raise the total to $40,000.

The spray can be made with arsenate of lead or arsenate of zinc, both of which have been used with complete success. Where arsenate of lead is used the poison is weighed or measured for use at the rate of 2 pounds of powder, or 4 pounds of the commercial paste, to each 100 gallons of water. It is prepared by stirring the poison in a little water until it becomes a thin paste without lumps. It is then diluted and strained and 2 pounds of laundry soap, which assists in making the solution spread more readily and stick to the leaves, is added.

There is practically no danger of burning the foliage of alfalfa. To be most effective, the spray should be mixed just before use and kept stirred up so as to prevent the settling and wasting of the poison and clogging of the pipes in the spray pump. Care should also be taken to keep out all dirt and lint which might interfere with the free passage of the solution through the spray nozzle.

It is important that the spray be applied at the proper time, which is when the young larvae of the weevil become so numerous that they completely destroy the growing tips and thus stop the growth of the alfalfa plants. Spraying before this time will fail to catch all of the weevil, and if the application is delayed the pest will destroy so much of the crop that it will be beyond recovery.

In the field infested with the weevil the tops of the plants are as white as if they had been frost bitten. The injury spreads downward and before the normal cutting time, if the field is allowed to stand, the whole plant is bare of leaves and the green cover has been stripped from the stems. Before this state is reached, or usually about one or two weeks before the first crop is ready for cutting, is the proper time for spraying. If the larvae have been poisoned through spraying of the first crop, the second crop sprouts and grows without delay and no further treatment is necessary.

Spraying Time Limited.

As the proper time for spraying is limited, it is essential that all preparations, such as securing the spray material and overhauling or repairing the spray machinery, be done in advance. Spray nozzles designed to give a misty spray, sometimes called hollow-cone, eddy-chamber, cyclone, whirlpool, and cover-spray nozzles, are best for this work, since the purpose is to make a fine, even coating of poison upon the upper foliage where the larvæ usually feed. The character of the spray produced by a nozzle of this type depends principally upon the pressure. With pressures below 75 pounds, many of the spray particles collect into drops and roll off the foliage. As the pressure increases the spray becomes finer and covers the foliage more completely. As the success of the work depends largely upon covering as nearly as possible all of the sprayed foliage, the pressure should not fall below 75, and might well be kept at 100 or more pounds.

The type and size of spray pump used depends upon the area which is to be covered. Any pump, with brass lining, valves, and pistons, capable of delivering four-fifths of a gallon or more per minute, and maintaining a pressure of 75 pounds, can be used for this purpose. The best results have been obtained with nozzles working 2 feet above the alfalfa, each nozzle, as it moves across the field, spraying a strip 2 feet wide. The spray pump should be regulated to deliver 100 gallons of spray mixture per acre. At this rate the actual cost of spraying is about $1 per acre, of which approximately 60 cents is charged to the poison.

The spraying of alfalfa for the weevil does not injure the crop for feeding, and will not harm farm animals. Many of the cattle which are fed upon it probably take in more arsenic with their drinking water than with their hay, and as for the lead content, few of them would under any circumstances live long enough to show the least effect of it, according to the bulletin.

SOUTHWESTERN FARMERS FIND MILO VALUABLE GRAIN CROP

Milo has long since passed the experimental stage as a farm crop in the southwestern United States, according to Farmers' Bulletin 1147, recently issued by the United States Department of Agriculture. This is shown by the rapid increase in its acreage and value in the past 19 years. From approximately 25,000 acres in 1899, valued at $200,000, the crop had increased in 1918 to 1,205,000 acres, valued at $21,300,000, nearly fiftyfold in acreage and more than one hundredfold in value. The increase in acreage in the 10 years from 1909 to 1918, inclusive, has been rapid and substantial, totaling about 900,000 acres, with an added value of $18,400,000.

Milo has not yet reached its economic limits in either acreage or production. These, it is said, should increase still further as the value and the adaptation of the crop are more generally understood. Many acres of land in the district where milo is adapted that are now unused or devoted to other less profitable crops may be used to advantage by growing milo. The best and surest way to improve the crop is for each farmer to select his seed, prepare a good seed bed, and give the crop good, clean cultivation.

Milo is used for feeding all kinds of stock. It may be used either as a grain ration or a roughage ration for horses and cattle. The use of the crop for silage is increasing. The grain is also used as food for man, milo meal being said to equal corn meal either for separate use or in combination with wheat flour.

Detailed information concerning the varieties of milo and their proper cultivation, harvesting, storing, and uses, is contained in the new bulletin, which may be had upon request of the United States Department of Agriculture at Washington, D. C.

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EVICTION NOTICES SERVED TO WOODCHUCK AND BEAVER

"If a woodchuck would chuck wood" always and leave root crops, clover, and alfalfa alone he would not now be in trouble with the Bureau of Biological Survey, United States Department of Agriculture. The woodchuck committed the error of believing that the introduction of these crops into the Northwestern States constituted an invitation to the whole 'chuck family to come and dine. The depredations inflicted by the animal in the Northwestern States and in New England are causing heavy losses, especially to truck growers and gardeners. In many instances wide strips of vegetation around the edges of the fields have been totally destroyed. The Biological Survey sent to those sections where the ravages were serious representatives to give eradication demonstrations to the farm owners. Woodchucks are resourceful creatures and easily adapt themselves to changed environments. This characteristic has led the bureau specialists to devise new methods of control which have been proved successful.

By doing what the woodchuck would not do, the beaver has made himself an unwelcome tenant in some parts of the Northwest. The beaver's willingness to cut wood, timber, and orchard trees led to serious damage in some orchard and timberlands. Unlike the woodchuck, however, the beaver is a valuable fur animal, and his propagation is encouraged, so the methods employed against the 'chuck could not be used in the case of the beaver. The Bureau of Biological Survey has solved the problem by arranging with the State game officials for the capture of beavers and their removal to streams where they can multiply without endangering valuable timber supplies and crops.

AIM TO ASSOCIATE AGENCIES IN GATHERING STATISTICS

The association of all public agencies immediately concerned in production and marketing of agricultural products into a closely cooperating group, to participate in collecting information for crop estimates and in utilizing the published results to the greatest advantage to producers and the general public, is the ultimate aim of the Bureau of Crop Estimates, United States Department of Agriculture.

In Idaho, for example, cooperation is now established between the crop reporting service of the Federal department and the three other leading public agencies—the State commissioner of statistics, the State agricultural extension service, and the farm bureau organizations. Each agency shares in the work and expense and the estimates are issued jointly. The agricultural extension service, through the county agricultural agent, encourages the creation by the farm bureau of crop reporting committees in every county and community center. These report local conditions to the agricultural statistician and receive, study, and disseminate the State and county reports issued by him. The statistician visits the different counties with specialists of the agricultural extension service to discuss this phase of the farming business at county and community meetings. Reports prepared under such conditions of general participation by those most immediately concerned are recognized as dependable and are widely and profitably used.

SPECIALISTS MAKING PROBE TO HELP CELERY SHIPMENTS

"Rough celery" is the market term applied to celery that is taken from the fields and packed in crates with little or no trimming. Transactions in rough celery always are more or less indefinite, because of the lack of grading. The Bureau of Markets, United States Department of Agriculture, has been conducting investigations in the celery markets of New York, New Jersey, Pennsylvania, and Ohio, to learn if it will be practicable to establish standard celery grades. In 1919, the railroads reported that 1900 carloads of celery had been moved from the States mentioned, and that most of it was shipped in the rough.

The establishment of two grades of rough celery would eliminate much waste and would enable dealers and receivers to place their orders and sales on a more definite basis. The first grade, as contemplated by the specialists who are conducting the investigation, would include sound stock that is practically free from pithy stalks, stalks that have gone to seed or are damaged from disease or insects. A minimum diameter for this grade of 1¾ inches would be fixed. The second grade would include any celery that did not meet the requirements for the first grade.

MIGRATORY BIRD PROTECTION NETS $20,000,000 FOOD VALUE

The passage of the migratory-bird treaty act, it is estimated, has resulted in a total return, in actual food value to the hunters of the United States, of more than $20,000,000. State officials have notified the Biological Survey of the United States Department of Agriculture that in Minnesota alone hunters report 2,058,400 ducks killed in 1919. As each of these birds may be considered to have a food value of at least 75 cents, the total return from them in food to this one State was about $1,500,000. If it had been possible to sell these birds they would have brought twice that amount. The great value of game to the country is thus made evident.

That the passage and enforcement of the law preventing spring shooting and marketing of migratory game birds is now producing excellent results is pointed out by officials of the Biological Survey. Without such restrictions they say the game birds not only would be greatly reduced in numbers but in many instances would be brought near extinction. The Biological Survey, which is charged with the enforcement of the Federal law and regulations protecting migratory birds, is receiving reports from all sections of the country showing that with the protection now enjoyed by the birds their numbers are increasing each year, and that they are returning in spring to numerous breeding grounds which they have deserted for several years.

In addition to the food value of the game thus assured by continued protection, the restrictions on shooting made by the law tend to perpetuate hunting as a sport. This has a recreational value through outdoor pursuit in building up the physical health and strength of the more than 7,000,000 hunters in the United States who go out with the guns every fall.

WHAT REINDEER MEAN TO THE UNITED STATES

By Dr. E. W. Nelson, Chief, Biological Survey
United States Department of Agriculture

During the last session of Congress the Biological Survey of the Department of Agriculture was given an appropriation to assist in developing the reindeer business in Alaska. In order to carry out the objects of this appropriation I secured the services of experts, and with them proceeded to Alaska in July, where a reindeer experiment station was established at Unalakleet, on the coast of Bering Sea, for the purpose of studying the parasites and diseases of reindeer and working out remedies for their control, as well as to conduct an investigation into the grazing conditions and requirements of the reindeer herds with a view to the future allotment of grazing areas to the herd owners, and to determine improved methods of handling the herds. Since my return to Washington I have received reports from the experts in Alaska showing that they have already gained information sufficient to indicate important changes for the betterment of the industry and for reducing the death rate of animals in the herds.

Less than 30 years ago 1,280 reindeer were introduced into Alaska from Siberia for the purpose of establishing herds to assist the Eskimos in maintaining themselves, owing to the disappearance of wild caribou and the reduction in numbers of seals and other sea animals along the coast, endangering the future of these natives. The success of this experiment has been extraordinary, as the number of descendants of the original importation of reindeer into Alaska now are estimated at approximately 200,000, of which about 50,000 belong to white men and the remainder to Eskimos.

Resembles Meat of Young Beef.

Reindeer meat is juicy, tender, and practically without the gamey flavor which characterizes so much other game. It most nearly resembles the meat of yearling beef. The skins of reindeer are valuable for glove-making purposes. Tanned with the hair on they are very light, and robes made from the soft, tanned skins of reindeer with the hair on are for weight probably by far the warmest covering known. These might become extremely useful as automobile robes for winter in the colder parts of the country.

The Lomen brothers and their associates, Mr. Jafet Lindeberg, of Nome, Alaska, are the largest owners of reindeer among the white men, having about 35,000 in their herds. During the past summer they imported and erected on the coast of Bering Sea between Nome and the mouth of the Yukon River two small refrigerating plants, with the necessary concentration corrals. The reindeer steers to be killed for export will be driven to these places, where they will be slaughtered and the carcasses chilled for shipment to Seattle. Experimental shipments during the past few years have demonstrated that there is a good demand for reindeer meat in the United States, which is now taking the place of native game which no longer can be legally sold. The last steamer from Nome to Seattle is reported to have brought 1,000 carcasses of reindeer, which average about 150 pounds each. Next year it is planned to make regular shipments on a considerably larger scale, and with the rapid increase of the herds shipments will continue to grow until reindeer meat from Alaska becomes a recognized article of food throughout the country.

Arctic Plains Valuable Grazing Lands.

Reindeer live on the treeless arctic plains, where in summer they feed mainly on the abundant vegetation which the short arctic summer produces, and in winter eat the lichen, commonly called reindeer moss, which covers great areas in the North. These arctic plains, or tundras, cover many millions of acres round the Bering Sea and arctic coasts of Alaska. The introduction of reindeer to Alaska has demonstrated that these arctic plains, which hitherto have been considered desert wastes, are really valuable grazing lands which will be a source of a new supply to meet the growing demands.

In this connection it is of interest to know that the Canadian Government last June leased a great area of land in extreme northern Canada to Stefansson, the arctic explorer, for the purpose of its being stocked with reindeer. The Canadian Government is taking an active interest in the development of this novel industry.

BOYS AND GIRLS EXHIBIT POULTRY.

The Boys' and Girls' Poultry Club exhibit at the State Fair at Jacksonville, Fla., November 18–27, 1920, was the biggest and best yet held in that State. There were 321 birds entered, representing 14 counties.

The Fair Association awarded liberal county prizes. Individual prizes were given on each of 15 varieties of chickens entered. All the money given as premiums is to be invested in stock, eggs, shipping coops, etc., to further poultry club work.

For the first time the Florida State Fair offered this year a poultry judging contest for the members of the girls' and boys' poultry clubs of the State. Four teams, of three members each, from Duval, St. Johns, Putnam, and Suwannee Counties entered the contest. The judging was of barred Plymouth Rocks and Single-comb White Leghorns. The Putnam County team won both team-judging prizes.

SWEET CREAM BUTTER KEEPS WITHOUT STORAGE FLAVOR

The Dairy Division, United States Department of Agriculture, advises a larger use of sweet cream butter, because of its better keeping quality.

The United States Navy is a large consumer of this kind of butter, made according to the Navy specifications from unripened or sweet cream, instead of from the cream ripened to sourness, of which most creamery butter is made. For several years past it has been the practice of the Navy Department to contract for butter made of sweet cream in large amounts to supply the officers and sailors. This butter is packed under the supervision of the Dairy Division of the United States Department of Agriculture. During the war, the personnel of the Navy being enlarged, a much greater quantity of butter was needed.

The principal reason the Navy desires sweet cream butter is that it keeps better. As the larger part of the butter supply is made during the summer months, it is necessary to put some of it in cold storage in order to have enough for winter, and in the course of time it develops various more or less undesirable flavors due to long storage. Butter made from sweet cream does not develop such flavors for a much longer time, if at all. Many months after it has been made it is equal to fresh butter, provided it has been kept under proper conditions; hence sweet cream butter is especially suitable for shipping to distant countries, and for long voyages.

Sweet cream butter is gradually coming into wider favor in the domestic market, the Department of Agriculture says, because some consumers prefer it. It has not so pronounced a flavor as ordinary butter, but it has a mild creamy flavor which is pleasing.

Campaign for Better Sires Now Includes Nearly 400,000 Head of Stock Enrolled

In the three months' period ending December 31, 1920, more than 93,000 head of live stock and poultry were enrolled by 486 owners in the "Better Sires—Better Stock" campaign now in progress to improve the quality of domestic animals in the United States. This is a large increase over the number enrolled during the previous quarter. Of the stock listed, 5,739 were males and, in accordance with the provisions of the campaign, all these were purebred. The female stock numbered 87,703, and the owners have pledged themselves to breed this stock to purebred sires only.

Counties Especially Active.

The county showing greatest activity in the campaign for better live stock during the quarterly period was Saline County, Nebr. Next in order are Stafford County, Va.; Tippecanoe County, Ind.; Pulaski County, Va.; Fauquier County, Va., and Platte County, Nebr. Craig County, Va., stands out as the principal county, since the beginning of the campaign, 15 months ago, in which there appears to be a strong tendency for crossbreeding. During the quarter just ended 17 "Better Sires—Better Stock" emblems were issued to live-stock owners in Craig County and all of them owned crossbreds. Crossbred animals were impartially distributed among all classes of stock, including poultry.

Many Purebred Females Also.

The records of the better-sires campaign continue to show that persons using purebred sires for all classes of animals owned have a large number of purebred females as well. In fact, of the 87,703 females recorded during the last quarter 61,504 were purebred. The remainder, arranged according to number, were grades, crossbreds, and scrubs.

Aggregate Results.

Significant figures in the progress of the nation-wide campaign to increase the use of purebred sires are the following:

Up to December 31, 1920, or 15 months since the beginning of the campaign, the total number of persons enrolled was 3,243. Of these 1,075 are in Virginia, which is the highest State in number of enrollments, and 446 are in Pulaski County, Va., which retains its place as the foremost county.

The total stock listed is 394,954, of which 238,122 are poultry and 156,832 larger animals. Among the latter, cattle lead, with 63,663, followed by sheep and swine in order. Smaller numbers of horses, goats, and asses make up the remainder.

As regards quality of the female stock, fowls are first, with 70 per cent purebreds, and swine next, with 65 per cent, while 37 per cent of the cows are purebred. Grade female stock rank highest with horses, sheep, and cattle in the order named. Crossbreeding is much more prevalent with sheep than with any other class of stock. Only 2 per cent of all the female stock recorded as being bred to purebred sires are scrubs and the lowest proportions of these are found in sheep and swine.

TENDENCY SHOWN TOWARD USE OF PUREBRED FEMALE STOCK

According to figures announced by the United States Department of Agriculture, live-stock owners in the United States show a tendency toward purebred female animals as well as toward purebred sires. In fact, the use of well-bred sires appears to increase the use of good females. During the period October 1, 1919, to March 31, 1920, the quality of female stock kept in herds and flocks headed by purebred sires was 48.3 per cent purebred and 2.5 per cent scrub. The remaining number were grades or crossbreds. Later figures covering the period October 1, 1919, to December 31, 1920, show that the number of purebred females kept under corresponding conditions had increased to 55.9 per cent and scrubs had fallen to 2.1.

These figures are based on a knowledge of the breeding of nearly 400,000 head of animals and poultry. In the opinion of department live-stock specialists, the more general use of purebreds of both sexes on farms in the United States is increasing. In about a year, it appears, the increase in the use of purebred females by purebred-sire users has been at least 7 per cent.

SUPPORT GROWS AS CAMPAIGN FOR BETTER STOCK EXTENDS

That there is widespread public interest in live-stock improvement is shown by the support accorded such activities as cow-testing associations, poultry culling, and the "Better Sires—Better Stock" campaign and similar movements of the United States Department of Agriculture. On June 30, 1920, cow-testing associations in the United States numbered 467, a gain of 84 over the corresponding date in 1919. Bull associations increased during the same period from 78 to 120.

The "Better Sires—Better Stock" campaign, planned to bring about improvement in the average quality of all classes of live stock, has been well received. On June 30, records show, 2,078 persons, owning approximately 232,322 head of stock, had pledged themselves to use only purebred sires and to follow methods of breeding leading to live-stock improvement. Statistical information compiled from blanks filled out by persons participating in the campaign shows clearly that purebred sires lead also to rapid improvement of female stock.

Comprehensive investigations now are being made by the department to learn definitely the principles of breeding which will make possible the most economical production.

CAREFUL BREEDING INCREASES PRODUCTION OF GOATS' MILK

Milk-goat experiments in grading up from native and grade Toggenburg and Saanen does with pure-bred Swiss bucks, begun in 1911, were continued last year by the United States Department of Agriculture, at the Government experimental farm at Beltsville, Md. The flock comprises 26 does and 8 kids of one-half, three-fourths, seven-eighths, and fifteen-sixteenths blood. The average daily milk yield per doe in 1919 was 3.92 pounds, an increase of 2.42 pounds over the yield of the 10 selected native does which formed the foundation stock of the herd. The highest milk yield for an individual doe in one day is 8.6 pounds. For 1919 the flock showed an average of 3.7 per cent butter fat.

WAR TO THE LAST BURROW DECLARED AGAINST RODENTS

How effective rodent-extermination work can be is shown by the results secured in one especially valuable range area in Sulphur Springs Valley, Ariz. In Cochise County, the Bureau of Biological Survey, United States Department of Agriculture, demonstrated effective procedure to a rancher, who completely cleared a tract of land comprising 30,700 acres. Neighboring ranchers were so impressed with the efficiency of the Government's operations that they asked the workers to come over into their country and help them. This was done, and all

the infested areas in Cochise and Graham Counties will soon be clear of the destructive little animals.

Prairie dogs and ground squirrels may seem to be innocent, inoffensive creatures, but actually they are very undesirable citizens. Of all the mischievous rodents which affect cultivated crops and range grasses west of the Mississippi River, these two families are the most widespread and the most destructive, says the Department of Agriculture. Previous to 1917 these rodents, aided by jack rabbits, pocket gophers, and field mice, destroyed crops and forage to the tune of $300,000,000 a year in the United States.

In 1917 Uncle Sam declared war on the villages of Dogtown and Squirrelville, and has carried it out on a large scale since that year. The Bureau of Biological Survey, cooperating with the State governments, the extension services, and the ranchmen, has cleaned up large areas of country formerly infested with these animals. In the last year it is estimated that the extermination of rodents has saved the ranchmen and farmers about $10,000,000.

During the year, in all the States affected, 19,117,737 acres of land was given poison treatment under the direction of the Department of Agriculture, and 15,172,709 acres were treated with the follow-up process, which makes extermination even more certain. Normally, the first poisoning kills from 85 to 98 per cent of the rodents; the follow-up is regulated to exterminate the survivors. In carrying out the work 1,610 tons of poisoned grain were distributed.

The reports show clearly that the rodents can not resist organized efforts to drive them out, but they also show that neglect on the part of the farmers and ranchmen may encourage a second invasion. In Kansas, after years of effort, the extermination of prairie dogs was accomplished with the exception of a few scattering towns. Through neglect by the landowners the rodents are again spreading their colonies into areas from which they have once been driven. Effort is now being concentrated upon these remaining small towns to complete eradication and thus prevent reinfestation of the State.

CIVIL-SERVICE EXAMINATION.

The United States Civil Service Commission announces an open competitive examination for investigator in poultry and egg handling, on February 23, 1921, to fill vacancies in the Bureau of Chemistry, Department of Agriculture, for service in the field, at salaries ranging from $1,620 to $2,400 a year.

Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.

Cowpeas Often Profitable Pasturage When Such Forage Can Well be Used

It is not considered the best farm practice to use cowpeas strictly as pasture, but under certain conditions it is advisable and profitable, say specialists of the United States Department of Agriculture, in Farmers' Bulletin 1153, Cowpeas: Utilization, just published by the department. Cowpeas furnish a pasture crop during a period of the year when such forage can be used to the best advantage. The small amount of work and the small cash outlay always associated with the grazing of stock commends the practice to the average farmer, and scarcity of labor often makes it necessary to pasture a crop whenever possible. Another advantage in pasturing cowpeas is that not only is the soil benefited, but the waste vines and animal droppings are also left on the land. The soil, after cowpeas have been pastured, is in an excellent condition of productivity for the fall sowing of wheat.

Cowpeas Best at Maturity.

The best time for turning the stock on cowpeas, the bulletin says, is when the crop has reached the stage of maturity considered best for hay; that is, when the first pods have matured. This practice, however, is not generally followed, as it is usual to gather at least a part of the seed. When cowpeas are grown in corn, the grazing is deferred until the corn has been gathered. Cattle usually are turned on earlier than hogs or sheep, the hogs being pastured on the ripe seed. If the stock are turned on before the plants have attained full size, there is more waste from trampling. As with most green-pasture crops, there is danger of bloat when sheep or cattle are first turned on cowpeas, especially in wet weather. The danger from bloat, however, is far less than with alfalfa, and decreases as the cowpeas become more mature. If the seeds are sufficiently mature, frost will not greatly lessen the pasture value of the vines.

Practical experience shows that good results are obtained by pasturing cowpeas with any kind of live stock. The most common practice is to hog them down. For young hogs cowpeas are a good feed, but some grain is required in connection with the cowpeas for best results. Hogs usually will feed on the mature pods first and leave the vines and leaves, especially when dry. After hogs have been pastured on a field for some time, cattle or sheep may be used profitably to pasture off the leaves and vines which the hogs leave. Sheep may be used on cowpeas in the same way as hogs. When sown in corn, the stover blades and cowpea seed make a fine ration for fattening fall lambs and wethers. Dairy cows show the effect of such pasturage in a much-increased flow of milk.

Benefits Hogs and Cows.

At the Arkansas Agricultural Experiment Station, steers fattened on cowpea pasture and cottonseed meal made an average gain of 2 pounds a day for 90 days. As long as the cowpea vines were green and considerable seed was available, very little cottonseed meal was eaten. The cost per pound of gain was only 2 cents for the cottonseed meal, thus showing the high value of the cowpea pasturage. The Oklahoma Agricultural Experiment Station reports that cowpeas planted in July furnished two grazing periods for milk cows before frost, and that the flow of milk was noticeably increased.

In a feeding trial at the Alabama Agricultural Experiment Station it was found that pigs fed on corn alone gained 0.36 pound daily, while hogs on cowpea pasture and corn gained 0.97 pound daily, consuming 36 per cent less corn for each pound gained. The same station conducted a feeding experiment with pasturage for dairy cows, using an upland cornfield from which the ears had been removed and in which cowpeas had been drilled between the rows. The field was first pastured by three milk cows and later by three dry cows. The milk cows in the meantime received 3 pounds of cottonseed meal daily. On this pasturage the yield of milk was 15.8 per cent greater and the yield of butter 9.5 per cent higher than when the cows with the same grain feed ran on a good pasture of Bermuda grass, carpet grass, and lespedeza. In addition to the increase in milk and butter, the milk cows gained a total of 85 pounds during the 19 days, and the dry cows 53 pounds in 9 days.

Cowpea seed, if good, can be stored for a considerable length of time without much danger of loss of vitality, say specialists of the United States Department of Agriculture. If the peas are sufficiently cured in the field, mow, or stack before thrashing, there is little danger of heating. However, seed not properly cured or stored quickly loses its vitality; consequently a germination test is always advisable.

Department Will Make Investigations For Establishing Tobacco Standards

In order to assist in placing the marketing of tobacco upon a more business-like basis, the United States Department of Agriculture is about to begin investigations which will lead to the establishing of tobacco grades applicable throughout the entire industry. Though tobacco ranks fourth among the crops of the United States, returns more than $1,000,000,000 a year in agricultural wealth to the Nation, and more than $300,000,000 in annual revenue to the Government, it is marketed in a manner which producers of less important crops would regard as a short cut to financial ruin.

Sold Privately by Some.

For this condition, the specialists of the Bureau of Markets, Department of Agriculture, blame primarily the auction system of sales in certain sections and the private contract system in other localities. Under the former method loose piles of tobacco to be sold are placed on the floor of a warehouse and examined by the prospective buyers. The tobacco is not graded, nor does the owner have much opportunity to describe the merits of his product. The auctioneer then calls the tobacco for sale and the buyers are practically in a position to obtain the tobacco for any price they choose to pay. In the latter case the tobacco is sold privately by growers, who usually have an indefinite idea of market prices, to buyers who are fully informed. The sales frequently are made on the farm and confirmed by contracts that are more binding on the seller than on the buyer. The sale often is made before the tobacco is harvested. At the time of the transaction the tobacco may be so far from being in a marketable condition that even the buyer is unable to determine its value, in which case the farmer usually gets what the buyer estimates to be a safe price or chooses to offer.

In a bulletin published by the Massachusetts Experiment Station it is stated that "under the contract method of sale the farmer has all to lose, with no corresponding gain; the buyer, little or nothing." The same statement would apply equally as well to the "auction system," department specialists say.

No Basis for Valuation.

Because of lack of grades, the tobacco producer is unable to determine if he is receiving a reasonable price for his product. There is no basis for comparison between the prices paid in one community and those paid elsewhere. Quotations of one market usually mean little in other markets, for they are not based upon recognized standards of quality.

In October the Bureau of Markets, United States Department of Agriculture, held hearings in a number of cities for the purpose of discussing with tobacco growers, merchants, dealers, bankers, warehousemen, and others interested in the industry tentative regulations for warehousing tobacco under the provisions of the United States Warehouse Act. These hearings were attended by members of the trade who were representative of the tobacco industry generally and considerable interest was shown in the bureau's work. At first there was an attitude of skepticism regarding the benefits to be derived from the warehousing of tobacco under the provisions of the warehouse act. Doubt was expressed that the bureau would be able to devise satisfactory tobacco standards, but in every instance before the end of the hearing the bureau's intention to take immediate action in carrying out its plans to place the marketing of tobacco upon a sound basis was approved.

Provides for Financing.

Under the provisions of the United States Warehouse Act, the Secretary of Agriculture is authorized to license warehouses for the storage of cotton, grain, flaxseed, wool, and tobacco. The chief purpose of the act, with respect to tobacco, is to establish a system of warehouses in which tobacco may be safely stored and through which the industry can more easily be financed and tobacco more advantageously marketed. To accomplish this purpose, the act is designed to provide a form of warehouse receipt which will be readily acceptable and widely negotiable as security for loans. Any warehouse that adequately protects the tobacco stored therein may be licensed. The regulations under the act provide for inspection of the premises at irregular intervals, examinations of the commodities stored, and observance by the warehouseman of standards of business practice.

Since the passage of the act, more than 300 applications for warehouse licenses have been received by the Bureau of Markets, the majority of them during the last year. Producers and warehousemen now appear to appreciate the benefits to be derived from the warehouse act. The bureau's regulations for the warehousing of tobacco are in the hands of the printers and will be ready for general distribution in the near future. How soon tobacco grades will be recommended will depend upon the ability of the bureau to carry on the work with the limited funds at its command. The bureau has received many assurances of cooperation by the tobacco industry.

UNITED STATES TO TABULATE FARM-EQUIPMENT PRODUCTION

A census which will show the number and value of different items of farm operating equipment manufactured in the United States during 1920, the number sold in the United States, and the number sold for export, is being undertaken by the United States Department of Agriculture. Information will be collected from the manufacturers of farm implements, vehicles, and other equipment.

Since 1916 the department has compiled yearly reports showing the production and sale of tractors, on information supplied by manufacturers to the Office of Farm Equipment Control and later to the Division of Agricultural Engineering. In order to meet the continued demand for similar figures regarding other machinery and equipment, it has been decided to collect information concerning the manufacture and sale of all the more important items.

The use of improved equipment by farmers in this country is necessary for the welfare of agriculture, and it has had much to do with the prosperity of American farmers as compared to those of other countries. The importance of the farm implement and vehicle industry has long been recognized, but little information regarding its size as compared with other industries has been available. Such figures also will furnish a better basis for estimating the extent to which farmers are using machines and equipment, and the amount which they invest annually in equipment for their farms.

The cooperation of the manufacturers, who generally realize the value of such statistics to their industry, has been assured. The Division of Agricultural Engineering of the Bureau of Public Roads, which is to have direct charge of the collection of this information, has been assured through the National Implement and Vehicle Association of the cooperation of its members. The present plan is to send to each manufacturer of farm equipment a form on which to report by mail the manufacture and sale of different items by his firm during 1920. The department wishes it to be clearly understood that it will follow its usual custom of keeping the reports of the individual manufacturers confidential, and that they will be used for no other purpose than that outlined.

Turning Jack Frost's Weapon Against Him—Weather Bureau Foils Old Enemy of Man

The Weather Bureau of the United States Department of Agriculture has been able to discover the weapon used by that old enemy of mankind, Jack Frost, and in a recent published report it tells the farmer and fruit grower just what Jack's invisible weapon is, and how, under ordinary conditions, the sprite's own artillery may be used against him.

Frost, of course, occurs whenever the mercury drops to 32° F. or lower. If much moisture is present in the atmosphere this drop in temperature is manifested by the white crystals of frozen moisture upon leaf or grass stem, and there is what is known as a "white frost." If the temperature drops to the required degree and does not reach the point when water from the air is condensed, there will be few crystals deposited, and the result is a "black frost." A "freeze" is the term applied to a condition of cold more permanent than a frost, and such a condition may occur when there are high winds. True "frosts" occur only when the surface air is relatively calm.

Temperature, like water, seeks a level. During the day the earth receives more heat than it can throw off, but at night, this supply of heat is stopped. During the day the heat thrown off by the earth warms the thin blanket of air next the ground. This blanket, as it warms, loses its density and ascends. Cooling as it rises, presently it encounters air of its own temperature, and there it stops. Meanwhile its place has been taken by other colder air, which is in turn warmed by contact with the ground. This exchange goes on until, at sundown, all the air of a wide layer above the earth has been warmed, and the highest temperature is felt nearest the earth.

Earth Squanders Its Heat.

Now, with the sunset, old earth begins to suffer from a bit of aerial trickery. All day long he has been patiently passing out heat to one cold air layer after another; night comes, and with it the loss of his source of supply, but do these warm upper air layers pass back any of the heat they begged during the day? They do not—unless they are made to. The layer close to the earth does, and thus they leave their coldest blanket against the shivering earth while they sail about 40 or 50 feet above their late benefactor, serene and warm and selfish, little caring that the spendthrift earth is freezing his toes below.

As the earth becomes colder the air blanket next his brown old skin becomes colder, too, and heavier as it becomes colder, so that the colder it grows the more tightly it fits, and he has little chance of throwing off his chilly coverlet to seize a warmer one. The earth, too prodigal of his day-time heat, regrets his generosity of the sunshiny hours.

On rainy days, when the cloud strata has cut off the sun's heat, the earth is not much warmed during the day. If, during the night, the clouds blow away, the earth is apt to go bankrupt. That is why, when the season is passing from spring to summer, or from summer to fall, a three days' rain is so often followed by a frost. The first clear night presents heat bills to the earth which he is unable to pay, and Jack Frost, nature's sheriff, places his crisp seal upon the improvident old fellow. The farmer looks out across his blasted fields in the morning and sighs, "A killing frost last night." And this is because the old earth, already gray with age and experience, hasn't yet learned how to "save up for a rainy day!"

Various Methods Used.

The most common method for frost prevention is to establish a sort of savings bank for the old fellow earth. Rest assured that he'll spend his reserve if he can! Glass makes the best heat savings bank. It has the curious property of allowing the heat from the sun to pass through to the earth, but it will not allow the radiated heat from the earth to go back to the "eager air." Glass is expensive, however, and can be used only for the protection of comparatively small areas of ground. Wood is also a good watchman to set above the ancient profligate. Though it will not allow heat to pass from the sun as glass does, neither will it allow it to pass outward from the earth. In sections of the South a lath network is used to cover crops during the danger periods. The wooden network holds down a large amount of heat, and when a frost occurs it helps the frozen plants by shading them from the direct rays of the morning sun and allows them to thaw gradually. Quick thawing of the frozen water particles in plant or fruit is fatal, as it causes the cellular tissues to break down; if the thawing process is very gradual the plant may reabsorb the fluid and the damage done may be surprisingly slight.

Paper is of less value in conserving heat than is wood, though it is more efficient than cloth. Cloth allows that cold mendicant, the air, to penetrate to the earth and steal the last degree of heat from him. So a cloth covering must be quite heavy if the frost is a hard one. Iron or metal pots are not at all good as bankers for the earth—they allow the heat to pass back into the air almost as readily as the earth itself.

There is another method that is employed to save the spendthrift from the sheriff. The presence of moisture in the air makes the radiation of heat difficult and helps greatly to conserve the heat which the earth already holds. Also, if the temperature drops to freezing, each drop of water gives up a bit of latent heat before congealing, and all these tiny contributions help to keep the surface air warmer.

A breeze from ocean, lake, or river will usually bring this wet blanket, and it can sometimes be supplied in an artificial manner by letting water into irrigation ditches. Results not so good may be had by building damp smudge fires in the orchard. Cranberry growers often save their crops by flooding the area with water. In the event of extreme cold it is often possible to submerge entire areas growing this crop. This gives absolute protection. Less prodigal than earth, water keeps its reserve heat for long periods of time.

The third method of keeping the earth solvent is by adding heat to the air layers near the surface. This is done by means of many small fires of oil, coal, wood, or orchard refuse, and is a method well known in sections where fruit growing is a specialty. It is sometimes scorned as an attempt to "warm up all outdoors," but that is not what happens, exactly. We know that, at night, the air above the earth is warmer than the air directly against it. Therefore, if the lower and colder strata could be lifted and mixed with the upper air, a higher and more equable temperature would result.

Force Air to Be Honest.

By kindling numerous small fires this may be done. The hot gases rushing upward from each blaze lift and toss both cold and warm layers until a warmer mixture is applied to the earth. The hot gases serve to assist in warming the chilled atmosphere, but the effect of direct radiation amounts to very little. This difference in heat quality is very well illustrated in our homes. Direct radiation is the sort of heat given off by the wood-burning parlor stove when its fat sides are glowing on a cold winter night, while the hot gases given off by combustion pass up the chimney.

This method of preventing frost is very efficient, and each year it saves much

money for American fruit growers. Just how it is best applied, how many fires are needed to the acre, and the form and style of burner giving the best results, are well discussed in Farmers' Bulletin No. 1096.

Many a fruit grower has nursed an expensive orchard to the point of bearing only to see his well-deserved reward vanish in a single night. But more and more we are discovering that, if we can not defy certain natural laws, we may still nullify their results through a better understanding of their principles. This is what the up-to-date fruit grower does. He can not eliminate frost, but he can use its principles to protect himself from its effects.

Tips to Orchardists.

The bulletin treats the frost-prevention methods very thoroughly, and the pamphlet should be particularly useful to anyone who owns an orchard or who contemplates planting one. First of all, the experts point out, the orchard owner should determine whether his crop will pay the expense of protection; if it will not, then he had better move to a less erratic climate. Certain fruits will stand a lower temperature than others, and the experts furnish a temperature chart to show this. Here it is:

Temperatures endured by blossoms for 30 minutes or less.

Fruit.	Closed but showing color.	Full bloom.	After fruit has set.
	°F.	°F.	°F.
Apples	25	28	29
Peaches	25	26	28
Cherries	25	28	30
Pears	25	28	30
Plums	25	28	30
Apricots	25	27	30
Prunes	28	29	30
Almonds	26	27	30
Grapes	30	31	31

Charts which show in a graphic way how the fires should be distributed through an orchard are reproduced. These have been prepared from studies made in successful orchards and are the result of the best methods in use in this country. Overhead costs are discussed, as well as the care of the frost-fighting apparatus.

Records Should Be Kept.

Once an owner decides to fight Jack Frost for his profit it is most important that he keep records of the battles, so that he may refer to them when the next skirmish threatens. The knowledge that a 10-mile wind will prevent frost when the thermometer is at 40° F. at sunset may apply to only one fruit farm, but it will save that owner the expense of lighting his fires if he *does know* it. Records, if he keeps them, will tell him this.

Several bits of home-made apparatus will save the frost fighter good sound dollars, and the pamphlet tells how these may be made and used.

The effect of soot from the oil flames upon the fruit and fruit blossoms is made clear to the reader in an account of experiments conducted to determine this problem. As a matter of fact, soot does not hinder the pollination of fruit blossoms, nor does it injure them in any way. Green fruit is not hurt by the fires in an orchard, though mature fruit may be ruined for the market by receiving the dark coating of soot. In this respect some burners give less smoke than others and their relative values are set forth.

From first to last, the United States Department of Agriculture Farmers' Bulletin 1096 is filled with valuable information for any one who is attempting to grow fruits or vegetables in frost-visited areas. It is an invaluable manual for any person who may be appointed as temporary receiver to stand between a shivering, bankrupt world and its ungrateful creditors. As stated before, this mundane sphere, in spite of a hundred thousand years of cold toes and chilly nights, has never learned to save in the sunshine of plenty against the night of want. And it never will.

Recommends Means for Fighting Various Diseases in Cucumbers

Certain diseases that affect cucumbers live over from one year to the next in the soil, investigation by the United States Department of Agriculture shows. A transfer to new soil each year in addition to seed treatment and spraying of the vines is found advisable to effect their control.

The ornamental wild cucumber vine is a factor in over-wintering and spreading cucumber mosaic or "White pickle," one of the most serious diseases. Mosaic cucumber fruits are often deformed, mottled with green and yellow, and have numerous large dark green warts. The leaves turn yellow and die, leaving stretches of white stalks.

The disease does not live in the soil, but it is believed to be caused by a virus which lives over winter in the wild cucumber seed and is spread by striped beetles. The cucumber beetles feed first on the diseased wild plants in the spring and then fly to the cucumber fields. The eradication of the wild cucumber is therefore recommended.

Downy mildew is prevalent in the Eastern, Southern, and to some extent in the North Central States west of Illinois. It is caused by a fungous parasite, and can be checked by timely and thorough spraying with 4-4-50 Bordeaux mixture.

Angular leaf spot or leaf blight is caused by a bacterial parasite and is carried by the seed. It can be combatted best by treating the seed in a 1-1,000 corrosive sublimate solution, washing them in running water afterwards, and drying immediately. Directions will be sent on application to the department. The disease may live over in the soil to a slight extent, making rotation advisable.

Cucumber anthracnose, recognized by brown dead spots on the leaves and sunken areas on the stems and fruits, is a fungous disease which lives over winter in the soil and probably on the seed. Seed treatment and rotation are recommended.

Cucumber scab is another fungous disease, known also as spot rot and pickle spot, which occurs mainly in the northern cucumber-growing sections. Stems and leaves are attacked, but it is most noticeable on the fruit. The disease lives over in the soil, and crop rotation is recommended.

Bacterial wilt is caused by bacteria which live in and clog the water-carrying vessels of the plants and causes them to die. The disease is carried over winter and spread chiefly by striped cucumber beetles. It may be somewhat checked by pulling and burning or burying all wilted plants as soon as they appear and by spraying with 4-4-50 Bordeaux mixture and arsenate of lead (4 pounds), the spray acting as a repellant and poison to the beetles.

34 STATES GIVEN FEDERAL AID IN WAR ON HOG CHOLERA

The United States Department of Agriculture during the last fiscal year cooperated with 34 States in investigating reported outbreaks of hog cholera, administering treatment, preventing the disease from spreading, and stamping out the contagion by approved methods of cleaning and disinfecting premises, pens, and yards, where cholera-sick hogs had been held.

In addition, Bureau of Animal Industry veterinarians conducted demonstrations, assisted veterinary practitioners in improving their technique, and conducted general educational work. During the greater part of the year, 140 veterinarians devoted their time to the control of hog cholera, but in the last quarter, when it became evident that such activities would be curtailed during the fiscal year 1921, owing to lack of funds, the number of veterinarians was reduced. For the same reason it became necessary to reduce the educational part of the work.

Cane Sirup a Profitable Farm Product—Why More of It Is Not on the Market

Good cane sirup made on the farm by a man who knows how to make it! Is there anything more delicious for hot cakes?

Knowing the demand for a high-grade cane sirup and realizing also that it is a profitable farm product in many Southern States, the United States Department of Agriculture set investigators at work to find out why more farm sirup was not on the market. In Department Circular 149, the troubles of home sirup making and their cures are set forth.

Quality Varies With the Maker.

The quality of cane sirup depends more upon the man who makes it than upon the machinery he employs. Three men with identical machinery will make three different qualities of sirup. One may be excellent, the second not so good, and the third very poor, though juice from the same vat has been used throughout. In that difference in quality the chemists find the reason why homemade-sirup making does not flourish as it should. The housewife buys a can without a label and with no easy means of determining the quality of its contents. Perhaps the sirup is excellent—her family prefers it to the sirup from the factory—and she buys another can. Sooner or later she is bound to find that not all homemade cane sirup is good. One lot is packed in sticky, dirty cans; in the next the sirup is too thin and has fermented a trifle. The next is unpleasant in flavor because it was made from frozen cane. Another can is half full of crystallized sugar—which is no fault at all, but she does not know that—and finally she goes back to the factory product, which has the one great advantage of standardization and, by reason of its label, identification.

A farmer may build up a good market for his own sirup but it is an expensive, time-taking business. He may unite with several farmers and ship a carload of canned sirup to a merchant, but if the sirup is not of a standard quality he will find it difficult to sell another carload to the same man. If he is well located he can sell his sirup to a factory in barrel lots, though the price he receives will not be as satisfactory as if he could reach the customer or the merchant directly.

The solution is found in cooperation. A number of farmers who grow varying amounts of cane unite to form a company with a capital of not less than $3,000 and seldom more than $5,000. The stock is sold, and, in a $3,000 plant, $2,000 goes to build a small cannery and to purchase vats and a boiler. The remaining $1,000 is held out to absorb operating costs until the production is well under way.

The idea back of such a plan is this: To take all the sirup produced in a vicinity, grade, mix, sterilize, and can it; then market it as a standard, stable community product rather than as the output of several individuals. A brand and label are devised, and the label goes upon every can sent out from the cooperative factory. This serves to advertise and identify the sirup when it reaches the market.

The farmers, not necessarily the stockholders, bring their sirup to the plant and receive cash amounting to what would be paid them by a commercial factory. The sirup is strained to remove impurities and poured into a mixing vat, where the various flavors are blended to form a single one. From the mixing vat it is drawn or pumped into heating vats, and there it is sterilized and reduced to a uniform density. It goes from the heating vat directly into the can—sterilization and prompt canning eliminate danger of fermentation later on. The cans are then sealed, labels pasted on, and the cans crated for market.

A Desirable Product.

As the sirup leaves the cooperative factory it is a product that any merchant is glad to handle and any housewife is glad to buy. It is a standard product with the label of a community to indorse its quality and to guarantee that the second, or third, or one hundredth can is as good as the first.

When the sirup has been sold and the work finished, every association member receives an additional check for the amount of the difference between the barrel-lot price, already paid him, and the selling price received for the improved product. Ten per cent of this goes back into the company as part of a reserve fund. The cost of operating a plant which has a capacity of from 1,000 to 1,500 gallons a day is estimated to be close to $23 during normal times; the cost of canning 100 gallons of sirup is estimated in the following table:

Cost of Canning 100 Gallons of Sirup.

Management, canning operations, and fuel	$2.00
Labeling	.25
Crating and stacking	.60
Labels	.65
Crates	2.00
Cans	12.50
	18.00

The system provides an outlet for farmers who can raise a small crop of cane and produce more sirup than they will consume at the home table. It has the advantage that, as a system, it may be reduced to accommodate a very small business or increased to form a very large one that can market all the cane product of an entire county.

BOYS AND GIRLS EXHIBIT AT VIRGINIA STATE FAIR

Among the most interesting and instructive features of the recent Virginia State fair were the exhibits illustrating extension work in the State. Thousands of people visited these exhibits and, it is believed, got from them a better understanding of the possibilities of good farming and home making and of what the extension service is doing to make life in the open country more efficient and profitable and more pleasant.

Especially notable features of the display were 109 baby beeves exhibited by members of baby-beef clubs in 10 counties of the State; 38 Holsteins and 6 Guernseys exhibited by dairy-club members; 53 pure-bred pigs exhibited by members of pig clubs in 15 counties; 417 birds exhibited by poultry-club members representing all parts of the State; and 91 especially fine exhibits of corn grown by club members.

The exhibits made by the members of the girls' clubs were rated as among the most popular features of the fair. They included fine examples of canning club work, as well as of the skill of the club members in cooking, sewing, and other things in which club girls excel and which are of special interest to home makers. A feature of special interest was a bread-judging contest in which girl club members took part.

The members of the negro farm-makers' clubs, who work under the supervision of colored county agents, had a particularly meritorious exhibit in a special building of their own. There were 414 exhibits in all, including white and yellow corn, sweet and white potatoes, beans, cowpeas, and peanuts. The exhibitors included 216 boys, representing about 25 counties. Photographs were displayed which illustrated the wide range of club work among negro boys. One of these told the story of Joe Williams, of Greensville County, who produced 70¼ bushels of corn on a single acre, thus exemplifying the value of modern scientific methods of farming.

Many of the best birds in the poultry exhibits sold at good prices on the ground.

WIDELY FAMOUS CUSTER WOLF HITS THE LONG, LONG TRAIL

(*Continued from page 1.*)

supposed that he devoted himself to revenge for her death. Later on, he attached to himself two coyotes, not as equals, but as servants. He never permitted them to come near him, and they could feed from his kills only after he himself had finished. They traveled far out on his flanks, giving him warning of ambush or approaching danger and adding to the atmosphere of mystery that surrounded him.

All Tactics Failed.

After a bounty, reaching by stages from $100 to $500, failed to bring in the old criminal's scalp; after private trappers and sportsmen hunters had given up the quest; after poisons and dogs had failed—the stockmen tried a round-up. Having, as they thought, located the wolf, a large number of riders started in a great circle and closed up. This, like all the other devices, was unsuccessful. Some of the stockmen, in resignation, announced that they would have to board the wolf for the rest of his life. Others decided to send for a Government hunter. Therefore, in March, 1920, the Bureau of Biological Survey, United States Department of Agriculture, sent to Custer H. P. Williams, one of its best hunters, with instructions to stay after the wolf until he was taken, no matter how much time was required.

Williams went. He took with him a bunch of traps, but, as the old wolf was known to be trap-wise, he expected to depend mainly on his rifle. As things turned out, he required both the trap and the rifle to get the wolf when he was finally taken on October 11, 1920.

Since there is involved in this story the reputation of two geniuses—the criminal genius of the wolf and the protective genius of Williams—it may be just as well to let the account proceed in the language of the predatory-animal inspector who reported the facts to the Biological Survey. It was a long time coming. Like most outdoor men, he did not want to talk in heroics. Here is the story from the time Williams went to Custer until he brought down the criminal.

"When Williams first went into the country where the wolf ranged, he tried to find fresh tracks, but without success. He asked some of the men who had lost stock just where the wolf made his headquarters in their section. They said the wolf may have had quarters anywhere within a district 40 miles wide and 65 miles long. They told him to wait there a few days and the wolf would be sure to pay him a visit. Contrary to their advice, Williams went into the hills west of Pringle and found that the wolf was staying around some old dens in Pelgar Mountains.

"Williams scented up the soles of his shoes and started stringing out his traps. The wolf got on his trail that night and showed signs of great excitement at what he thought to be the presence of a possible mate in his neighborhood. He followed the scent entirely around the line and then, returning to Pelgar Mountains, cleared out two old dens and made a new one which ran back into the hill for about 50 feet.

Catches Sight of Wolf.

"On April 1, Williams had his first glimpse of the wolf, but was unable to get a shot at him. The coyotes were acting as bodyguards, traveling from 100 to 200 yards on the flanks of their master. They would warn him of danger by taking flight. For a while, Williams did not shoot the coyotes, hoping that he would get a chance at the wolf without having to give him warning by the shots that would be necessary to dispatch his bodyguard. Finally, realizing that there was no chance of getting at the wolf unless the coyotes were killed, Williams shot them, hoping that he then had a clear field. In this he was greatly mistaken. The wolf played hide and seek with him. After making a kill, he would go on some distance, back trail for a few rods to a point where he could keep under cover and watch the hunter on his trail. Though this is a common habit of a bear, I have never before known a wolf to do it. It was on April 26 that Mr. Williams first found the wolf was doing this. At other times the wolf took to fallen timber and so could not be tracked.

"Twice during May the wolf stepped on the jaws of traps, and on the night of July 3 he rolled into or lay down on one and had a lot of his hair pulled out. This gave him such a scare that he left the country for a while. No sign could be found of him near Custer until the night of August 1, when he made his presence known by killing several head of cattle and wounding several more. Williams found some of these cattle, took the trail of the wolf, and followed him all day on a fresh track. This led up to the mouth of a canyon, and, knowing that the wolf would be taking a sleep after his big feed, Williams tied his horse and started in. Just then two horsemen came up, riding at breakneck speed and calling to Williams that they had found a yearling steer killed by the wolf. Williams motioned them to go back, but they did not understand what he meant and he was forced to return to meet them. Thus, he lost the best chance he ever had of getting the wolf with a rifle. When he returned to the trail, he found the place where the wolf had bedded down to sleep. The noise made by the horsemen had given him the alarm and he had gone back down the canyon very close to the hunter and escaped.

Encounters Trap.

"Early in September the wolf stepped on a trap and was caught slightly by one foot. Apparently the trap had tipped so that it caught only one side of the foot and the wolf was able to pull loose. He left some hair in the trap. This happened again in the early days of October.

"Williams finally got the wolf on October 11. Here is his own account of it:

"'He stepped into a trap in the morning and it got a good grip on him. He ran with it about 150 yards when the hook caught on a tree, but that did not seem to stop him at all. He broke the swivel of the trap and ran on with it on his front foot. I trailed him 3 miles and got a shot at him and got him. He had been so lucky that I expected the gun would fail to shoot, but it worked O. K. He is smaller than the average male wolf, weighed 98 pounds and measured just 6 feet from tip to tip; 11 inches from toe to hock, and had a tail 14 inches long. His teeth would be good for 15 years longer. He broke some of them off on the trap, but aside from that they were in good condition. He is an old wolf, with a fur that is almost white.'"

In that simple fashion does the man who outwitted the cleverest of animal criminals tell his story.

EMPLOY DEFINITE SYSTEM TO FIND ENGINE TROUBLE

With the approach of cold weather many tractor, automobile, and gasoline-engine owners who have experienced trouble in starting their motors are calling on the United States Department of Agriculture for help. In return they are getting information that is of material assistance in solving the difficulty.

Gas-engine specialists of the Department are urging that a definite system be followed in locating the trouble. Both the ignition and fuel systems should be gone over in a systematic manner. Cold retards the vaporizing of fuel, so, if no fault is found with either of the systems, it may be necessary to inject a small quantity of gasoline—about a teaspoonful—into each cylinder, or, in very cold weather, to fill the cooling system with hot water.

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COURT UPHOLDS SECRETARY'S RIGHT TO REVOKE LICENSES

Judge Evans, at Chicago, Orders Firm to Return Money.

Suits of Five Live-Stock Commission Men of Illinois Against the Secretary of Agriculture for Revoking Licenses Seriously Affected by the Decision.

The right of the Secretary of Agriculture, under section 5 of the Lever Act, to revoke licenses of live-stock commission houses for failure to return to customers moneys found to have been charged in excess of moneys actually spent for feeding stock held for sale in their yards was upheld in an opinion handed down January 12 by Judge Evans, sitting in the United States District Court for the Northern District of Illinois.

Affects Five Suits.

The opinion was filed in the cases of the Lee Live-Stock Commission Company and others against E. T. Meredith, Secretary of Agriculture, and affects five separate injunction suits of the same nature filed in Chicago against the Secretary of Agriculture. Section 5 of the Lever Act authorizes the President to order the discontinuance of any unjust practices, and to revoke licenses for any violation of the act. The President is also authorized to promulgate regulations governing licensees. One of these regulations provided that licensees should not make or exact any unjust charge for feeding live stock.

In accordance with the act the administration of the regulations was intrusted to the Secretary of Agriculture. The Secretary found, after a hearing, that the licensees involved in this case were making unjust charges for feeding, in that they were charging shippers for feed purchased for, but not consumed by, their stock, and which feed was later fed to other stock. This resulted in the same feed being purchased and paid for by at least more than one shipper. The Secretary accordingly ordered the discontinuance of this practice and the distribution among the shippers of the fund which had accumulated in the hands of the commission men as a result of it, intimating that he would revoke the licenses of the commission men unless the order was complied with in a reasonable but specified time.

Claimed Regulations Invalid.

The commission men brought the suits to enjoin the Secretary from revoking their licenses, claiming that he was exceeding his authority and that the regulations were invalid. The court holds that the Secretary was not acting in excess of the authority conferred by the act, and that the regulations are reasonable and promotive of the purpose of the act—that is to say, that they are valid. He also holds that it was as proper for the Secretary to order the money to be turned over to the shipper as it was to order the practice discontinued. He therefore denied the motion of the commission men for a permanent injunction. The cases are pending for disposition on the complainant's bills and the Secretary's answers.

IMPROVE MARKETING BY EDUCATION.

One of the important fundamental problems confronting marketing agencies, according to the Bureau of Markets, United States Department of Agriculture, is the education of the public to a point where it will generally realize that the present marketing system is a product of evolution; that improvements must be made gradually by changes in method and procedure and by eliminating specific recognized evils; that it is impossible to set up instantly a perfectly efficient and automatically operated new marketing machine; or to cure all economic ills by legislation. The public must appreciate also, say the specialists, that marketing is quite as much a problem for the consumer as for the producer.

SHOWS DECLINES AND GAINS IN VALUE OF FARM PRODUCTS

Animals Found to Lag Behind Crops in Price Movements.

Drop in Values Was Almost Entirely Confined to Crops in 1920, With Corn Among the Worst Sufferers—Ten Crops, Chiefly Oranges, Made Notable Gains.

The value of farm crops of 1920 and of the farm animal products and animals sold and slaughtered, as finally determined by the Bureau of Crop Estimates, United States Department of Agriculture, is $19,856,000,000 or $5,105,000,000 below the total of 1919. The drop is almost entirely confined to crops, among which the chief declines in value are: Corn, $1,662,000,000; cotton lint and seed, $1,300,000,000; wheat, $854,000,000; hay, tame and wild, $325,000,000; tobacco, $248,000,000; and oats, $161,000,000.

Ten Crops Show Gain.

On the other hand, as many as 10 crops gained in value, chief of which are oranges, with a gain of $32,000,000, and sugar beets, $24,000,000. Other items of gain are cabbage, $11,000,000; cowpeas, $10,000,000; sorghum cane sold and sirup made, $7,000,000. Small gains were made by soy beans, sugar-beet seed, maple sugar and sirup, and onions. Apparently, the products of the farm wood lot have gained $223,000,000 in value in the comparison with 1919.

After offsetting gains against losses, the net crop-value reduction in 1920 below 1919 is $4,868,000,000, while only $237,000,000 is found in the total of farm animal products and farm animals sold and slaughtered. The wool decline is as yet unrealized, but it is reckoned at $37,000,000. Of the animals sold and slaughtered, the decline for cattle and calves is $223,000,000, and for swine, $427,000,000. But on the other side of the account, dairy products gained $311,000,-

000, and poultry raised and eggs produced, $160,000,000.

It is the rule that, in the upward and downward movements of prices, farm animals and animal products lag behind crops. So extreme was the lag in the price of animals and animal products in 1920, on account of the extraordinary fall in the prices of crops within a short period of time, that the total crop value of 1920 is reckoned to be only 56 per cent of the total value of all farm products. In the estimates for a long series of years, this is the first crop-value estimate that has fallen below 60 per cent of the total of all products.

EXPERTS DISCOVER UNKNOWN SUBSTANCE EXISTING IN SOIL

One of the most important discoveries in the science of soils has been made by experts of the United States Department of Agriculture within the last year in the separation of a hitherto unknown substance which has been designated as ultraclay, a gelatinelike substance, very sticky and plastic when wet and having in the dry state the general appearance of resin. It appears to be a silicate of alumina, usually with some iron and traces of potassium, sodium, magnesium, and calcium, whether combined or merely absorbed being a point not yet determined.

This ultraclay is believed to be the principal factor in making the soil plastic, but when added to loose and incoherent sand in proportions up to 10 per cent, and the mixture made into briquettes and dried, it gives to the sand a crushing strength greater than an equal amount of Portland cement. The briquettes made with ultraclay, however, fall to pieces when put in water, while those made with Portland cement retain their form.

The discovery has an important bearing upon the physical properties of soils and is being studied in cooperation with the Bureau of Public Roads as a guide in adjusting the structure of concrete and other pavements to the texture of the soil on which they are built.

NOAH'S ARK UP TO DATE.

From the time of Noah when the dove brought the green back, homing pigeons have been of constant service to mankind. That well-bred stock of this breed is desirable is shown by a live-stock owner in Henrico County, Va. He lists 22 homing pigeons of pure breeding among other live stock enrolled in the Better Sires—Better Stock campaign.

DODDER VERY SERIOUS PEST IF REMEDIES ARE DELAYED

Radical Measures Necessary Often to Save Clover and Alfalfa.

Discovery of This Parasite on the Farm No Cause for Serious Alarm, But Rather for Employment of Systematic Plan for Its Eradication.

If remedies to exterminate dodder—the parasitic plant infesting clover, alfalfa, and some other plants—are applied before it gets a foothold, the pest does not cause serious damage. If, however, dodder is permitted to develop unmolested, radical measures will be necessary in order to control it. These are points discussed in Farmers' Bulletin 1161, entitled Dodder, just published by the United States Department of Agriculture, which describes the noxious character of dodder, methods of preventing its introduction on the farm, and systematic plans for its extermination.

During recent years, specialists of the department say, an increase in the number of complaints of dodder have been received from all parts of the United States. They add, however, that the discovery of this parasite on the farm should not be the occasion of serious alarm, but rather for the employment of a well-conceived and systematic plan for its extermination.

Starts in Small Patches.

During the first season of infestation, in clover or alfalfa, dodder usually occurs in small scattered areas. As is the case in combating all weeds, it is essential that dodder should not be permitted to mature seed, and such small infested areas should be mowed and the dodder removed or burned in the field to prevent the development of seed. If seed has formed, burning the patches of dodder is the only remedy, since it kills not only the plants but also any seeds which may be lying on the surface of the soil.

If infestation is so great that patch treatment can not be depended upon, it will be necessary, in order to free the farm of the pest, either to plow the crop under or utilize it for hay before seed has formed. In the latter case, the aftermath left on the field should be closely grazed, for which purpose sheep are especially useful. If the infestation is general and threatens seriously to damage succeeding crops, it may be necessary, according to the bulletin, to cut the crop, allow it to dry, and burn it in the field in order that all dodder seed may be destroyed.

As with all weeds, preventing introduction on the farm is far easier than eradication after it has once gained a foothold. It is usually introduced by the use of impure seed, and the bulletin urges that farmers learn to distinguish dodder seed so that they can recognize it when they are purchasing clover and alfalfa seed. For adequate examination, a magnifying glass is necessary. There is a wide range in size of dodder seed, but in general they are usually dull-coated with roughened or minutely pitted surfaces, and usually have two or three flat surfaces, while the seeds of clover are usually smooth, rounded, and possess a certain luster. Furthermore, the scar on dodder seed usually is very inconspicuous, whereas the scar on leguminous seeds is clearly evident. Their color ranges from dark-brown to green or yellow. While it is possible to remove a large percentage of dodder by carefully cleaning impure clover and alfalfa by screening, it is practically impossible to remove large-seeded dodder by this process.

When animals are allowed to graze where dodder grows, they should not have access to fields not infested, since they are likely to spread the weed by means of pieces of stems adhering to their coats and hoofs. On land which contains the seeds of dodder, the bulletin suggests the use of a five-year cropping system consisting of plants which are not damaged by the pest, and recommends the following plants: Corn, soy beans, velvet beans, cowpeas, and small grains such as oats, wheat, and rye. Sugar beets, onions, flax, and a few other cultivated plants are subject to dodder infestation, but clover and alfalfa are its important hosts.

ONE-THIRD OF COUNTRY NOW COMPLETED IN SOIL SURVEY

One-third of continental United States has been covered to date by detailed or reconnaissance soil surveys by the Bureau of Soils, United States Department of Agriculture. The total area covered by detailed survey amounts to 547,733 square miles, or 350,549,120 acres, and that covered by reconnaissance survey is 516,286 square miles, or 330,423,040 acres. As large areas of mountain and desert land in the West are not expected to be available for agriculture in any near period, it will be seen that a large proportion of necessary work of this kind has been completed. Soil surveys are widely consulted for various purposes, including contemplated purchases of land, selection of crops, and planting of gardens.

TOO MUCH WEIGHT ATTACHED BY PUBLIC TO BEEF SURPLUS

Has Had Precarious Existence Both Before the War and Since.

Debits So Far Exceeded Credits in 1919 That the Beef Surplus Fell to 59,000,000 Pounds, or Less Than 1 Per Cent of the Production, Including Edible Offal.

Popular misunderstanding is magnifying the superficial fact that this country has a beef surplus—a surplus that has had a precarious existence both before the World War and since. There is something more to the story than the exports of several hundred million pounds of beef and its products in a year. To the extent that this is balanced by imports of beef, beef products, and beef cattle, it is not a surplus, according to the Bureau of Crop Estimates, United States Department of Agriculture.

Not only did the imported exceed the exported beef in 1914, but the equivalent beef and its products and edible offal of the cattle imported from Canada and Mexico greatly exceeded the exports of beef cattle, so that, within the scope of the terms here used, the United States was a deficiency country with respect to beef in that year to the extent of 480,000,000 pounds. Similarly in 1915, the national beef deficiency was 92,000,000 pounds.

War Turned Tide.

War demands turned the tide in 1916, when the national surplus of beef was 153,000,000 pounds; in 1917 it was 206,000,000 pounds; and in 1918 the surplus was 576,000,000 pounds.

But the debits so far offset the credits in 1919 that the beef surplus fell to 59,000,000 pounds, or less than 1 per cent of the production, including edible offal.

The United States has been a surplus mutton country, since 1913, only in 1918 and 1919, by 1,000,000 and 5,000,000 pounds, respectively.

On the other hand, the enormous export of pork and its products has been unfailing year after year for a great many years, with totals of hundreds of millions of pounds, even extending beyond two and one-half billions of pounds in 1919.

With regard to excess of either production or consumption of beef and mutton, this country may be said to be in a seesawing position, except as influenced by such high-priced foreign demand as that of a great war. After all, the constant great national meat surplus is one of pork and its products.

Meat was exported by the surplus countries of the world in greatly increased quantities in response to the war's demands. The better to understand this, continues the Bureau of Crop Estimates, it is well to compare the change in supply for the five years from 1913 to 1918, with the change for the 18 years from 1895 to 1913, or a period three and three-fifths times as long.

The total exports of all kinds of meat increased by one-half in each period; animal fats and oils gained by one-fifth in the earlier period, but remained stationary in the war period; mutton nearly doubled in the earlier period, but declined about one-half in the later one, or to the original quantity; pork gained only one-tenth in the 18 years, or hardly at all, yet it almost doubled in the five years.

What was substantially the world's export meat trade of the surplus countries in 1895 was 2,734,000,000 pounds, as determined by the Bureau of Crop Estimates; by 1899 the quantity had risen to 3,537,000,000 pounds; and by 1913, the year before the World War began, it was 4,101,000,000 pounds. In 1918, the last year of the war, the world's export meat trade was 6,460,000,000 pounds.

Meat Imports Changed by War.

Distribution of the world's exports of meat was naturally greatly changed by war. From the point of view of imports, the United Kingdom, which had for many years taken 62 per cent or more of the world's total, increased its share to 75.4 per cent in 1914 and received 70 per cent in 1915 and 1916, 67 per cent in 1917, and 69 per cent in 1918. France's share of the world's meat imports increased from 1.8 to 15.9 per cent from 1913 to 1918, and Italy's from 2.1 to 10.3 per cent. The three countries named took 68 per cent, or two-thirds, of the world's total meat imports in 1913, and 95 per cent in 1918, or almost the entire quantity.

New Sources of Supply.

Brazil, China, and British South Africa rose to some prominence during the World War as exporters of meat, Brazil especially. From a normal export of 1,700,000 pounds of meat from Brazil in 1913 and 1914, the quantity jumped to 94,000,000 pounds in 1916, to 230,000,000 pounds in 1917, and to 251,000,000 pounds in 1919, of which 146,000,000 pounds was beef, 46,000,000 pounds pork, and 59,000,000 pounds unidentified meat.

China was exporting yearly about 50,000,000 to 65,000,000 pounds of beef and pork from 1912 to 1915. The quantity became 101,000,000 pounds in 1917, and rose to 148,000,000 pounds in 1919. From British South Africa, meat exports, mostly beef, increased from about 500,000 pounds at the time the war began to 18,000,000 pounds by 1916, and to 46,500,000 pounds by 1919.

Beef vs. Pork.

The war changed the United Kingdom's imports of pork and its products from 29 per cent of all meat imports in 1912 and 1913 to 34 per cent in 1916, to 40 per cent in 1917, and to 50 per cent in 1918, weighing 1,656,000,000 pounds. The fraction for beef was about 47 per cent before the war, and it fell to 39 per cent by 1918. In the last months of the war, the foreign hog had become of more importance to the United Kingdom than the foreign steer.

France increased its imports of beef relative to total imports of meat from 45 per cent in 1913 to 75 per cent in 1915, after which year the fraction declined to less than 65 per cent in 1918, or to 493,000,000 pounds.

BAHIA GRASS IN CUBA IS A PROMISING SOURCE OF SEED

An important new source of seed for Bahia grass, which is regarded as the most valuable grass yet secured for permanent pastures on the higher and drier land in Florida, was revealed through a recent trip to Cuba, by Prof. C. V. Piper, of the United States Department of Agriculture.

Bahia grass (Paspalum notatum) was introduced from Brazil by the department in 1914. There existed no records of the cultivation of this grass, but different botanists had reported it as an important native pasture grass in Brazil, Argentina, Uruguay, and Costa Rica, both in clayey and sandy soils. The experimental tests soon showed that this grass was highly desirable for pasture purposes in Florida and along the Gulf coast, succeeding both in dry and moist soils. The rapid use of the grass has been handicapped by the lack of a source of seed supply. Prof. Piper discovered that Bahia grass is the dominant pasture grass of western Cuba, making up the lawns and pastures there in about the same proportion as does bluegrass in Kentucky and Iowa. The pastures were closely grazed, indicating the high palatability of the grass, a fact also evident in experimental plats in Florida and observed by South American agronomists. The indication is that it has high nutritive value, increasing the flow of milk and fattening both sheep and cattle.

The great abundance of the grass in Cuba makes this a promising source of seed supply, and vigorous efforts will be made to stimulate the harvesting of abundant supplies to meet the demand in Florida.

Weekly News Letter

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UNITED STATES DEPARTMENT OF AGRICULTURE
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John L. Cobbs, Jr., Chief

PRESS SERVICE
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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

NEW OFFICE FORMED TO MEET NEED FOR MARKETING DATA

A statistical section has been established in the Bureau of Markets, United States Department of Agriculture, to meet the need for accurate and complete figures in working out marketing problems. The statistical section has already collected and distributed in mimeographed form extensive data relating to marketing conditions, receipts, shipments, supplies, prices, etc. This information has been largely used in studying market fluctuations over short periods. Many of the files, however, now cover a period of years, and when these figures are tabulated, summarized, and analyzed by a competent statistician they should indicate significant trends and be of great assistance in the analysis of fundamental factors affecting marketing conditions. The data is compiled from a general rather than a special standpoint and is nation-wide rather than local in scope. At present, consideration is being given to the issuance of a comprehensive annual summary of marketing information in statistical form.

ACCURACY OF CROP ESTIMATES SHOWS THEIR DEPENDABILITY

An index to the accuracy of the estimates made by the Bureau of Crop Estimates, United States Department of Agriculture, is shown by a comparison of the estimates on cotton yields made by the bureau in December with the annual report of bales ginned issued by the Bureau of the Census the following March. The deviation of the estimates from the census during the period of 20 years, 1900 to 1919, inclusive, was 2.5 per cent and the average underestimate for the 20 years 1½ per cent. In 1915 and 1916 it was less than one-half of 1 per cent—and for the last three years it was about 3 per cent under the final census report. These later underestimates appear to have been due partly to the practice which developed during the war of prolonging the picking season and gathering unopened bolls after the close of the picking season, called "bollies" and "snaps," which was encouraged by the relatively high price for both lint and seed. This new factor appears not to have been taken into account by the cotton reporters.

MODIFIES EUROPEAN CORN BORER QUARANTINE RULES

A modification of the European corn borer quarantine announced by the United States Department of Agriculture eliminates, during the period from January 1 to June 1, 1921, the requirement of inspection and certification of celery, green beans in the pod, beets with tops, spinach, rhubarb, and oat and rye straw as such or when used as packing. During this period, it is said, there is no risk from such products even though grown in the infested area.

Most of the products of this class on sale in Boston and shipped out of that city are received from southern points. It is believed, therefore, that the new change in regulation will do away with much unnecessary work and will result in a material saving to the department.

At present the quarantine against the borer extends to the States of Massachusetts, New Hampshire, New York, and Pennsylvania, and regulations govern the movement of articles likely to carry the pest from the infested localities to other parts of the country.

COOPERATIVE WORK IN SOUTH SAVES FARMERS MUCH MONEY

During the last year a farmers' exchange in Beaufort County, N. C., saved its members and the farmers in the community between $75,000 and $100,000, according to a report to the United States Department of Agriculture.

The organization, formed to aid potato growers, has shown high proficiency in cooperation. Last season its activities were confined to the purchasing of branded barrel covers and the selling of potatoes. Thirty-five thousand barrel covers were bought at a saving of $700, and 126 carload lots of potatoes were sold with a saving of $50,000.

A great growth in cooperative marketing and purchasing has been one of the outstanding results of extension work in the South. County agents, assisted by marketing specialists, through marketing demonstrations and by instruction and advice, have aided local and county associations of farmers in the cooperative selling of many kinds of farm produce and live stock, and in the cooperative purchasing of a great variety of farm necessities.

Farmers have gained knowledge of methods and acquired confidence in their ability to do business on a cooperative basis. They are beginning to undertake definite business organizations on a county-wide and even State-wide scale for the marketing of their main cash crops, such as cotton, tobacco, and peanuts.

Owing to the cooperative work in cotton grading, classing, and stapling, and information given as to the market value of the various grades and staples by extension workers, it is estimated that between $1,000,000 and $2,000,000 were saved to the cotton farmers of Texas during the year in increased returns.

SOUTHERN NEGROES AIDED BY FARM EXTENSION WORK

To help the southern Negro farmer practice better agricultural methods, obtain better schools, and improve his living conditions, the States Relations Service of the United States Department of Agriculture employed during the last fiscal year, in sections where a large part of the rural population is colored, 158 Negro demonstration agents, 74 Negro women agents, and 2 Negro field agents. In addition the white agents have, as far as possible, assisted and advised many Negro farmers, both tenants and owners, the same as white farmers. Many of the best demonstrations along all lines have been carried on by Negro farmers under the direction of white county agents.

Some striking results have been secured, the work being very effective, particularly in stimulating the production of home supplies, especially the home garden, in securing the adoption of better farm methods, and in educating the Negro farmers to the importance of better live stock, the use of improved implements, and better sanitation and living conditions.

Successful extension courses for Negro farmers and their families were held in several of the States for the first time this year in connection with the Negro agricultural schools. The responsible Negro leadership in the South is cooperating with the extension work more effectively than ever before.

INSECTS OUR MOST FORMIDABLE RIVALS

By Dr. L. O. Howard, Chief, Bureau of Entomology, United States Department of Agriculture.

The insects are our most formidable rivals in the struggle for existence.

Economic entomology does not deal alone with insects which attack fruits and growing crops. It must deal with insects that affect grains and foods in storage, that damage our clothing, that kill our domestic animals and, too, that carry disease to man himself, that eat up our wooden buildings, and that honeycomb our books and implements.

We must fight them all along the line.

One of these insect enemies against which the Bureau of Entomology has been directing a fight, is the angoumois grain moth, popularly known in this country as the fly weevil. It is primarily a pest of wheat and corn in this country, but affects all cereal grains. It is particularly injurious in the Southern States, and does little harm north of central New Jersey, except to cereals in storage.

Ruins Whole Crops.

It is second to the rice, or black, weevil in its capacity to damage grain. Often entire crops of corn and wheat are ruined. Wheat loses through moth attack about 52 per cent of weight. Corn loses from 12 to 24 per cent. Bread made from affected grain is worthless. The moth also eats barley, oats, buckwheat, sorghum, milo, rice, beans, chickpeas, and cowpeas.

This is mentioned as an example of avoidable insect pests which the United States Department of Agriculture not only teaches but assists farmers to avoid.

In the case of the angoumois moth, which works damage to stored grain in regions where its propagation among growing crops is prevented by the short seasons, the department is urging farmers to fight the pest systematically by such measures as early threshing, proper storage, and fumigation. It teaches them to take advantage of the weakness of the insect by fighting its further spread.

It is only by constant and intelligent effort that mankind can overcome the ravages of insects of every kind which attack almost every substance on which he depends for his livelihood and comfort. In this effort, the public should take advantage of the services rendered by experts of the Bureau of Entomology and by other experts of the department.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended January 22, 1921:

Parasites and Parasitic Diseases of Sheep. Farmers' Bulletin 1150.

One-Register Furnaces (Pipeless Furnaces). Farmers' Bulletin 1174.

Spraying for the Alfalfa Weevil. Farmers' Bulletin 1185.

Farm Profits; Figures from the Same Farms for a Series of Years. (Professional Paper.) Department Bulletin No. 920.

Substitutes for Sucrose in Curing Meats. (Professional Paper.) Department Bulletin No. 928.

The Production of Binder-Twine Fiber in the Philippine Islands. (Professional Paper.) Department Bulletin No. 930.

Some Rules for Poisoning the Cotton Boll Weevil. Department Circular 162.

Regulations for Tobacco Warehouses. Secretary's Circular No. 154.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1150; Department Bulletin No. 920; Department Circular 162.

WEIGHING MILK PRODUCED GIVES TRUE WORTH OF COW

Reports coming to the United States Department of Agriculture often include stories of the surprises which cow owners meet with when they start keeping records of their cows' production. For instance, in a Missouri cow-testing association there was a man who, when he entered the association, did not appear to have a very good herd; but among his cows was a crippled, ten-year-old Jersey named Goldie. Old Goldie led the whole association, with an annual production of approximately 9,300 pounds of milk and 526 pounds of fat, and an income over cost of feed amounting to $267, in spite of the fact that when the test started she had already gone three months since freshening. The amusing part of Goldie's record is that her owner tried to sell her just before she went on test, for $75. Six months later he refused $275 for her.

The whole herd of which Goldie was a part averaged over 360 pounds of fat for the year. In contrast with this was another herd of 37 cows in the same association, which had been reputed to be the best in that part of the State. Yet 14 of these were sold during the year as unprofitable, and it seemed likely that more of them would be.

Similar stories come from other States. The Dairy Division has been giving a great deal of effort to the extension of cow-testing associations throughout the country, and there are now nearly 500 associations in various States.

The man who joins a cow-testing association never runs the risk of selling a $200 milk producer for $80 because her appearance is poor, nor of wasting his feedstuffs and work on a good-for-nothing cow because she looks like a good milker.

It is both profitable and practicable to know for a certainty the worth of a cow by weighing her milk. A man in a cow-testing association has the milk of every cow weighed and tested once a month, from which it is easy to calculate the total for a year. He saves the trouble of doing it himself by having the cow tester do it. The tester also weighs the feed, and figures out the cost of the milk; so that at the end of a year the owner of a herd of cows knows exactly what each one has given, what she has eaten, and how much income over cost of feed she has brought him.

FREEZING IN TRANSIT CAUSES BIG LOSS IN PRODUCE YEARLY

Enormous losses are caused annually because large quantities of fruits and vegetables are frozen in transit. Last winter shippers of apples in three States—Oregon, Washington, and Idaho—filed claims against railroads amounting to over $3,000,000 to cover losses from freezing. To assist in reducing such losses, the Bureau of Markets, United States Department of Agriculture, has distributed as widely as possible information relative to the proper methods of loading and heating both refrigerator and ordinary box cars. Recently, as a result of investigations, the bureau has practically completed the design for heating equipment for use in connection with the United States standard refrigerator car, the specifications for which were drawn up in this bureau. Experiments have shown that a refrigerator car, equipped with this heating system, will protect fruits and vegetables from freezing, even at a temperature of 40 degrees below zero. Service tests, to adapt this heating system to practical every-day conditions, will be carried on this winter.

Substitutes for Sugar in Curing Meat Give Successful Results, Tests Reveal

That several sugar substitutes can be used successfully in place of cane sugar for curing hams is indicated by experiments recently made by specialists of the United States Department of Agriculture. It was found that ham and sweet pickle bacon when cured with dextrose, cerelose, 70 per cent corn sugar, or refiners' sirup, compared favorably with meats cured with cane sugar. Bacon cured with the corn sugars was considered to be of slightly better quality than that cured with cane sugar or refiners' sirup. In the case of beef hams (groups of muscles in the hind quarter of a beef carcass) the use of dextrose and cerelose yielded dried beef of as good quality as that obtained by the use of cane sugar. The experiments throw considerable light on opportunities for conserving large quantities of sugar in case sugar saving should again become a national problem, the specialists say.

Of Preliminary Nature.

The experiments are regarded as of preliminary nature, and while the results indicate strongly that several substitutes can be used successfully instead of cane sugar, department specialists say it is advisable for meat-packing establishments to conduct curing tests on a moderate scale before curing large quantities of meats with the substitutes. The results of the investigation, together with the methods used, have been published in Department Bulletin 928, Substitutes for Sucrose in Curing Meats.

During 1917 more than 17,000,000 pounds of sugar or its equivalent in sirup were used in curing meats processed in Government-inspected establishments. While the war-time need for the information has passed, the results of the experiments are of economic value.

The sugar substitutes for curing meats which the specialists found to be most successful are refiners' sirup and two of the three grades of corn sugar. Refiners' sirup is a dark-colored, strong-flavored product resulting from the refining of cane sugar. It is produced in two grades and the production of both in 1918 was estimated by one of the large sugar refining companies to have been 345,000,000 pounds, which is equivalent to approximately 210,000,000 pounds of sugar. It appears, says the bulletin, that the total supply of refiners' sirup is about 10 times greater than the amount required to meet the sugar needs of the meat-packing industry. Of the corn sugars, dextrose, a white powder mildly sweet and readily dissolved, and cerelose, a light-brown, mildly sweet, second-grade corn sugar, gave good results in curing meat.

In conducting the tests the Government specialists determined not only the quality of the products, the basis of appearance, but tested also the palatability of the cooked product. Here certain results showed the many sides of the problem. Bacon cured with corn sugar browned more readily on frying than that cured with cane sugar or refiners' sirup. In fact in some cases the bacon cured with corn sugar had a dark and burnt appearance after frying. In other cases, however, the use of substitutes resulted in products of superior quality.

CIVIL SERVICE EXAMINATIONS.

The United States Civil Service Commission announces open competitive examinations to fill positions in the Department of Agriculture, as follows:

Food and drug inspector, on February 23, 1921, to fill vacancies in the Bureau of Chemistry, for duty in Washington, D. C., or elsewhere, at $1,600 a year. Apply to the Civil Service Commission, Washington, D. C., for Form 1312, stating title of examination desired.

Specialist in cotton classing, to fill vacancies in the Bureau of Markets, at salaries ranging from $2,700 to $4,000 a year. Date of examination, March 1, 1921. Apply for Form 2118, stating title of examination desired, to the Civil Service Commission, Washington, D. C.

26 VARIETIES OF POTATOES IMMUNE FROM WART DISEASE

Tests made by the United States Department of Agriculture (in cooperation with the Pennsylvania State Department of Agriculture and the Pennsylvania State Experiment Station) in 1919 and 1920 to determine the behavior of American varieties of potatoes in the presence of the wart disease, a serious European trouble recently found in this country, have shown that 26 named varieties of American origin are immune to the disease. These are: Irish Cobbler, Flourball, First Early, Early Eureka, Early Petoskey, and New Early Standard, of the Cobbler group; Ehnola, Extra Early Sunlight, White Albino, and Early Harvest, of the Early Michigan group; Spaulding Rose, Northern King, and White Rose, of the Rose group; Burbank of the Burbank group; Green Mountain, Green Mountain Junior, McKinley, New Oregon, McGregor, Norcross, and Gold Coin, of the Green Mountain group; Round Pink Eye and McCormick of the Peachblow group; and Keeper, Success, and Ursus, which are unclassified.

In addition, 12 new, unnamed seedling varieties developed by the department were also found to be immune, as well as 24 English and 5 Scotch varieties. Seven of the English varieties, namely, Edzell Blue, St. Malo Kidney, Rector, Majestic, Arran Rose, Great Scot, and Irish Queen, gave good yields, but only one, Edzell Blue, gave a yield that compares favorably with that of the best American commercial sorts.

Potato wart has been a serious disease in northern Europe for many years, and in 1912 the United States placed an embargo on potatoes coming from countries where it was known to exist. Shipments received prior to that date are considered responsible for its introduction into this country. It was discovered in 1918 in gardens at Highland, Pa., in the heart of the anthracite mining district, and subsequent surveys have shown that its occurrence is restricted to a limited number of mining villages in Pennsylvania, West Virginia, and Maryland, inhabited largely by foreigners, from which its spread has been restricted by prompt and rigid State quarantines.

Wart is looked upon as one of the most serious potato diseases. In badly infected gardens in Pennsylvania practically the entire crop was found to be destroyed by the disease. However, the discovery that a number of the best commercial American varieties of both early and late potatoes are immune to wart offers an important means of control. These varieties are so generally grown that it will not be easy for the disease to gain a foothold in our important potato-growing districts even if it should escape from the areas to which it is now confined.

"ALL-WINTER" GARDENS.

In sections of the South where the climate is mild during the winter, such crops as lettuce, spinach, kale, and onions can be grown every month. Under these conditions it will pay to give special attention to the winter garden. Throughout the northern part of the country, however, the winter months are practically a rest period. It should be borne in mind that nature is working all the time and the wise gardener takes advantage of the changes taking place during the so-called intervals of rest.

Government to Take No Step to Prevent Shooting of Privately Owned Bison Herd

Although a few years ago slaughter of even a few bison would have been deemed a national calamity, the Biological Survey of the United States Department of Agriculture will make no definite effort to stop the proposed shooting of a considerable number of these animals on the privately owned Antelope Island in Great Salt Lake, announced in news dispatches.

While regretting the announced decision of the owner of the herd to turn the fine animals over to sportsmen at $200 a head, Dr. E. W. Nelson, Chief of the Biological Survey, does not find it expedient to curtail other and more necessary game preservation measures by seeking a congressional appropriation to buy this herd at the owner's price. A bill to purchase the island and animals for $300,000 was recently introduced by Congressman Welling, of Utah.

Dark Day Passed.

"The dark day of the bison has passed," said Dr. Nelson, reverting to the time not many years ago when the principal remnant of the countless herds that once roamed this continent consisted of a pitiful group of less than 100 in Yellowstone National Park, where they were prey to poachers because of inefficient protective laws.

"As a matter of fact, with the present rate of increase, it may become a problem in a few years how we shall care for the buffalo on the national preserves. It would be desirable for the Government to own the Antelope Island herd but there are other and more urgent uses for the money. I would much rather it were spent to buy additional range land north and south of Yellowstone Park for the sustenance of the elk which find insufficient winter feed within the grounds."

Statistics of the American Bison Society show that on January 1, 1920, there were 3,393 captive and wild buffalo in the United States, of which 1,032 were under the direct protection of the Federal Government. The rate at which the animals are "coming back" may be partially realized from the fact that the January 1, 1920, figures gives 298 buffalo on the national bison range at Moiese, Mont., while recent figures show 336. The nucleus of this herd was 40 buffalo in 1909. The leader is Kalispell Chief, a fine old veteran who has maintained the primacy of the herd through the years. This herd is under the protection of the Biological Survey as are also 61 animals at Wind Cave, S. Dak., 7 at Sully's Hill, N. Dak., and 28 at Niobrara, Nebr. Of the other buffalo under Government protection, the January, 1920, figures give 21 in the National Zoological Park at Washington, 6 on the Pisga Game Preserve, N. C., 3 on the Platt National Park, Okla., 119 on the Wichita National Forest, Okla., and 502 in Yellowstone National Park. There were 489 buffalo calves born in the United States in 1919.

NATIONAL FORESTS WILL AID ALASKAN DEVELOPMENT

The national forests of Alaska offer the best key to unlock the great resources of that Territory, according to the Secretary of Agriculture in his annual report to the President. Practically all of the most valuable timber in Alaska is still owned by the Government and is already playing an important part in the industrial development of the region. The mills cutting national forest timber are now furnishing nearly all the lumber used in the Territory, while the location of pulp mills in the national forests will greatly aid in solving the problem of our future supply of newsprint paper. Decentralized administration, however, is necessary to obtain the best results, the Secretary says.

"The Department of Agriculture, in common with a number of other departments, has very definite responsibilities in connection with Alaskan development," the report states. "It is endeavoring, for example, to increase the production of crops and live stock; it has experts in the field investigating the possibility of building up the reindeer herds into an important source of meat supply; it is giving attention to the perpetuation of the fur industry. But its chief responsibility at the present time is in connection with administration of the national forest in Alaska. Under regulated use the Tongass National Forest alone can probably produce forever 1,500,000 tons of newsprint yearly, along with ample quantities of timber for local purposes."

Intimately Related.

The administration of the national forests is intimately related to every form of industry and to every community in the coastal area, and because of this relation a peculiar responsibility rests on the Forest Service in Alaska, the Secretary says. "Long-range administration is unsatisfactory," he points out. "The public resources in Alaska can be properly managed only by lodging authority in men on the ground to act without waiting to consult distant superiors; the Forest Service has consistently followed this policy. There is close cooperation between the Forest Service and the Territorial government, and the animating purpose of the forest officers is to make the forests serve the welfare of Alaska."

The investment of capital enterprises for the development of resources which can be developed in no other way is the greatest need of Alaska, the Secretary says, and the pulp-wood supplies of the coast forests offer the best immediate opening for capital. "To the task of securing their utilization on a large scale, the energies of the Forest Service are now being directed with every promise of success. One large sale has already been closed and others are in prospect. Through such enterprises the population of the Territory will be built up, its wealth increased, and other forms of development stimulated."

BOARD FIXES TEA STANDARDS.

A tea party of more than ordinary significance met in New York City, January 24. When the last cheering cup had been passed, the standards of purity, quality, and fitness of all tea to enter the United States from abroad during the year beginning May 1, 1921, were determined and sent to the Secretary of Agriculture for his approval.

The United States Board of Tea Experts who selected the standards for the coming season were reappointed by the Secretary of Agriculture. They were: J. J. McNamara, New York; H. G. Woodworth, Boston; Arthur T. Hellyer, Chicago; C. E. Wyman, St. Paul, Minn.; E. R. Rogers, Tacoma, Wash.; George W. Caswell, San Francisco; and George F. Mitchell, Charleston, S. C., supervising tea examiner, Bureau of Chemistry, United States Department of Agriculture.

As a rule cowpeas should not be cut for hay before the pods begin to turn yellow. The best quality is produced and the hay cures most readily if the vines are cut when most of the pods are full grown and a considerable number of them are mature. At that stage of growth none of the best hay varieties will have dropped their leaves and the plants will have practically attained their full growth.

Clover-Leaf Weevil Has Powerful Enemy—Fungous Disease Holds It in Check

If it were not for an ever-present fungous disease, which is a powerful natural enemy of the clover-leaf weevil, this pest would develop into a serious menace to one of America's most important crops—clover. The clover-leaf weevil, even with this handicap, is one of the most dangerous of clover pests and exacts a large annual toll. The larvæ of the weevil usually are checked by the fungous disease, which spreads rapidly and reduces their numbers to a negligible quantity in a remarkably short time, according to Bulletin 922, Clover-Leaf Weevil, just published by the United States Department of Agriculture. This bulletin describes the clover-leaf weevil, its life history, distribution, habits, and natural enemies.

Brought from Europe.

Like many pests now present in this country, the clover-leaf weevil was introduced accidentally from Europe, where it is well known. The first record of its occurrence as a pest in the United States was in 1881, when a severe outbreak occurred at Barrington, N. Y. It is now found in practically every section of the country where clover is grown. Its chief food crop is clover, but it also feeds on alfalfa and sweet clover.

The adult weevil lays its eggs on the stems of the clover plant, and in early spring the larvæ hatch and begin to feed as soon as the clover starts its growth. Larvæ are most numerous during April, but beginning with May there is a gradual falling off in numbers, and by the end of that month or the middle of June, practically all have completed their growth and spun their pupal cocoon. The adult weevils, or beetles, emerge in from 5 to 16 days, and feed steadily on the clover plant for about two weeks, after which they become semi-dormant, or remain inactive until early in September. At this time they again become active and feed for about a month, during which the eggs are laid.

Hides During the Day.

Both the larvæ and adult weevils feed during the night, and conceal themselves in the day under rubbish or in cracks in the ground. Usually they work on the underside of the leaves where they eat small holes and are not seen except by the careful observer. The most important check on the pest is the fungous disease, which kills the larvæ in vast numbers during the months of April and May, and again in October or November. This disease is epidemic, and contagion so rapid and thorough that in from two to four weeks it is almost impossible to find living individual clover weevils where previously there were thousands. This disease is well distributed in the United States and attacks numerous other insects. Wild birds and poultry, especially turkeys and chickens, are natural enemies to the insect and devour both the larvæ and beetles.

Control measures consist in pasturing the clover in the fall or clipping it in the spring. Plowing under the second year's crop in the fall is recommended, not only to hinder the increase of the insect, but to control others which attack clover.

CANE SIRUP IMPROVED BY THE USE OF EARTH FILTER

Infusorial earth applied to the manufacture of cane sirup produces a clearer, milder, and more palatable product than is usually obtained by sulphur clarification or by skimming. The Bureau of Chemistry, United States Department of Agriculture, has been experimenting with the new process, and their report, recently published in Bulletin 921, seems to indicate that the day of the dark, muddy, unattractive cane sirup has nearly passed. The use of milk of lime and sulphur fumes to separate the impurities from cane juice is difficult to control properly and not entirely satisfactory. Too much lime makes the sirup very dark in color and too much sulphur dioxide gives it a metallic taste, which makes it generally unpopular.

Skimming, which is another method used for clarifying sirup, usually produces a palatable product, but one that is apt to be discolored by sediment and difficult to standardize.

The new process consists in heating the juice as it comes from the mill to the boiling temperature. At this stage a small amount of infusorial earth—about 12 pounds to 200 gallons of juice—is added, and after mixing thoroughly the juice is pumped through a filter press. The resulting filtrate is bright and clear and ready for immediate evaporation to sirup. No further skimming or other treatment is necessary. The color will depend upon the care taken to prevent scorching during the evaporation and the flavor of the sirup will be the natural cane flavor. The material added is an inert, tasteless substance which has no action other than to remove impurities from the juice.

The process can not be conducted properly by the farmer who produces only a small amount of sirup by skimming and evaporating, but it does lend itself to small steam factories and to the larger sirup factories of a capacity ranging from a few hundred to many thousand gallons a day. The earth filtration process in a sirup factory handling 50 tons of cane a day will add about 32 cents per ton of cane ground to the cost of manufacture. However, in a plant of this capacity employing the skimming process, the daily loss is figured to be from 25 to 50 gallons of sirup. When using the new method, this loss can be reduced to 3 gallons of sirup. At an average price of $1 a gallon this means a saving of about $22 a day.

Another advantage gained by the use of the earth and a filter press is in the saving of time effected. The juice as it comes from the filter press is clean and bright and can be evaporated as rapidly as possible to finished sirup.

INDIRECT INCOME SHOULD APPEAR IN FARM ACCOUNTS

Labor income is not the limiting factor in determining how much the farmer shall have to eat, but it is the determining factor for the wage earner in the city. Food, fuel, and shelter are primary requisites of life, and the farm furnishes its proprietor a good proportion of these necessaries in addition to the income he derives from the sale of farm products. These things that the farm furnishes directly toward the living expenses of the farmer's family enable him to live even though his crops are poor. This indirect income from the farm is often underestimated, often unrecognized, unless provision is made for accurately recording it in the farm accounting system, say specialists of the United States Department of Agriculture.

LOSSES FROM FERTILE EGGS.

The following table, compiled by United States Department of Agriculture, shows that the losses of fertile eggs are computed to be nearly twice as great as of infertile eggs:

	Fertile eggs.	Infertile eggs.
	Per cent.	*Per cent.*
On the farm	29.0	15.5
At country store	7.1	4.0
Transportation to packing house	6.4	4.7
Total	42.5	24.2

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1920 RECORD YEAR FOR HIGH WAGE RATE PAID FARM LABOR

Rise of 115 Per Cent Since 1915 Put Big Burden on Producer.

War Conditions Greatly Accelerated An Upward Movement that Began After 1895—National Average Increased from $17.69 a Month That Year to $64.42 in 1920.

Wage rates for farm labor reached their highest point in the history of this country in 1920, as national averages. As ascertained by the Bureau of Crop Estimates, United States Department of Agriculture, the average wage rate for labor hired by the month was $46.89 with board, and $64.95 without board; for day labor at harvest, $3.60 with board, and $4.36 without board.

War Accelerated Rise.

War conditions greatly accelerated an upward movement of farm-wage rates that began after 1895. The rate of that year for hirings by the month without board was $17.69 as an average for the United States, and no other year in the record of the bureau extending back to 1866 had a lower rate, except 1879 with $16.42.

By 1902, this wage rate had increased to $22.14, by 1914 to $29.88, followed by $30.15 in 1915, with no evidence of war effect. This effect appeared, perhaps, as a small beginning in the next year, 1916 when the wage rate was $32.83. Then followed rapid rise to $40.43 in 1917, to $47.07 in 1918, to $56.29 in 1919, and to $64.95 in 1920.

The rate of gain over 1895 was 70 per cent in 1915 and 267 per cent in 1920, so that the gain of 70 per cent in 20 years, from 1895 to 1915, was followed by a gain of 197 per cent in 5 years, from 1916 to 1920, or nearly three times as much in a quarter as many years.

Made Gain of 115 Per Cent.

From 1915 to 1920, farm labor working by the month without board received a gain in wage rate as high as 115 per cent. This was one of the causes of the greatly increased cost of producing things on the farm, which has hit the farmer so hard in the declining market for his crops of 1920. So high had the farm-wage rates become in the last two or three years that they were prohibitive in a considerable degree when labor could be found, and farmers more generally depended exclusively on themselves and members of their families, in addition to extending the use of labor-saving machinery.

Board Allowance in Farm Wages Found to Vary With Locality

At what figure does the farmer estimate the cost of board as a part of the compensation of hired labor? Or, does he have any definite knowledge with regard to this? Southern farmers who supply "rations" to their laborers know precisely what the food costs, but the food is prepared for eating and is eaten in the home of the laborer. Elsewhere there seems to be no precision.

Wage rates ascertained by the Bureau of Crop Estimates, United States Department of Agriculture, with board and without board, afford materials for computing what the farmer must, by implication, regard the board of a laborer as being worth, or as costing, whichever the fact may be, as an element of wages. In hirings by the month, the difference between the rates of wages with board and without board, in the averages of the various groups of States, is least in the South Atlantic States, where a difference of $14.81 is found for 1920, and, nearly the same is the difference of $15.41 in the South Central States, or about 50 cents a day.

Considerably above these allowances are those of the two groups of the North Central States, east and west of the Mississippi River, $18.60 and $20.16, respectively. The difference in the North Atlantic States is yet higher and reaches $23.62, while, highest of all, is the allowance in the far western States, $26.22, which is 77 per cent above the lowest

(*Continued on page 8.*)

MARKETABLE WHEAT STOCKS 320,000,000 BUSHELS JAN. 1

Approximately 40 Per Cent of Amount Available July 1, 1920.

After Deducting 70,000,000 Bushels Carry-Over, About 250,000,000 Remains for Exports and Domestic Requirements for Six Months Ending July 1, 1921.

Marketable stocks of wheat in the United States on January 1, 1921, are estimated by the Bureau of Markets and the Bureau of Crop Estimates, United States Department of Agriculture, to be 320,000,000 bushels, which is approximately 40 per cent of the total available on July 1, 1920, and compares with 417,000,000 bushels on January 1, 1920. After deducting an average carry-over of about 70,000,000 bushels, there remains about 250,000,000 bushels in this country available for export and domestic requirements during the six months from January 1 to July 1, 1921.

Last Year's Figures.

Of the 417,000,000 bushels on January 1, 1920, about 109,000,000 bushels were carried over into the next season, as compared with the above average, leaving 308,000,000 bushels for six months' export and domestic requirements. These figures do not include flour stocks or flour equivalents, neither do they take into account imports or wheat held on farms for seed or other purposes, estimated at 12 per cent of the crop.

On July 1 of the last two years the supply of marketable wheat, including the new crop, was as follows, in millions of bushels:

	1920		1919	
Stocks	....	109	....	48
On farms	48	.....	19	....
Country mills and elevators	36	.....	19	....
Points of large accumulation	25	.....	10	....
Marketable crop (88 per cent of production)	....	693	....	828
Total	....	802	....	876

On January 1, of this year and last, the marketable supply was distributed as follows, in millions of bushels:

	1921	1920
On farms	192	208
Country mills and elevators	80	124
Points of large accumulation	48	85
Total	320	417
Total, per cent of July 1 supplies	40	48

Estimated stocks of wheat on farms and in country mills and elevators, by States, are as follows, in thousands of bushels:

State.	On farms.		Country mills and elevators.		Total.	
	1921	1920	1921	1920	1921	1920
New York	4,300	2,900	1,095	1,100	5,395	4,000
Pennsylvania	10,000	8,200	1,419	2,098	11,419	10,298
Maryland	3,000	2,400	369	757	3,369	3,157
Virginia	3,400	1,600	701	1,658	4,101	3,258
Ohio	7,800	11,100	2,170	5,778	9,970	16,878
Indiana	4,000	6,500	2,460	5,668	6,460	12,168
Illinois	3,200	7,500	2,514	6,363	5,714	13,863
Michigan	4,000	5,400	1,308	2,314	5,308	7,714
Wisconsin	2,000	2,400	235	614	2,235	3,014
Minnesota	9,500	11,000	1,929	2,725	11,429	13,725
Iowa	1,500	3,300	1,444	2,165	2,944	5,465
Missouri	5,800	9,500	2,957	8,278	8,757	17,778
North Dakota	13,600	15,000	6,629	7,771	20,229	20,771
South Dakota	4,500	8,600	3,078	4,754	7,578	13,354
Nebraska	16,800	16,300	2,696	4,655	19,496	20,955
Kansas	39,200	49,700	10,915	19,018	50,115	68,718
Kentucky	200	1,000	1,061	3,083	1,261	4,083
Tennessee	300	1,300	331	920	631	2,220
Oklahoma	8,500	13,400	3,481	7,545	11,981	20,945
Montana	2,500	2,100	3,192	1,415	5,692	3,515
All other	46,800	30,600	29,339	34,801	76,139	65,401
Total	191,900	207,800	79,523	123,480	271,423	331,280

FOREIGN COUNTRIES OFFER OUTLET FOR U. S. LIVE STOCK

As a result of a trip to South America by representatives of the United States Department of Agriculture in the interest of marketing purebred live stock, contacts were established and a business was transacted up to June 30, 1920, amounting to $400,000. The results of this trip have been so promising that it has been deemed advisable to keep a representative in South America, and arrangements are now under way by the Bureau of Markets for the establishment of a permanent office there.

MAKE HOMES ATTRACTIVE.

Suitable plantings are necessary to unite the parts of a farmstead into a pleasing, homelike whole. Trees are used for windbreaks, as frames for the buildings or a background for them, and to give shade. Shrubs are needed in abundance to hide partially the foundation lines of buildings, support their corners, give reasons for turns in drives or walks and to screen unsightly objects. Native trees and shrubs and those known by trial to thrive in the locality are the best to use.

Controlling Insect Pests in Flour Mills
Important Factor of Food Conservation

Control of insect pests in flour mills has become a very important factor of food conservation and of mill construction and operation. Keeping the mills clean and destroying insects by fumigation or heat treatment are means of preventing waste in the manufacture of flour, according to Department Bulletin 872, Insect Control in Flour Mills, recently published by the United States Department of Agriculture. The cleanliness and comparative freedom from pests of many of the well-lighted concrete mills, such as are being built more frequently now than ever before, are emphasized by the conditions that exist in old-type structures, says the bulletin, which adds that it is possible to produce flour entirely free from infestation as it comes from the bolting machines.

Causes Flour Losses.

The Mediterranean flour moth seriously affects the operation of flour mills and causes enormous losses of flour. In treating this insect other pests are destroyed. The Mediterranean flour moths make webs which sometimes become so numerous and adhere so tightly to the flour that they cause the machinery to stop, necessitating the expenditure of time and money before the mill can again be operated. It is estimated by specialists of the department that this moth causes from $100 to $200 annual loss in a mill of 1,000 barrels capacity. The insect is a native of Europe, was introduced into this country through Canada, and is now so widespread that it infests mills throughout the United States.

The Mediterranean flour moth gains access to the majority of mills through second-hand or returned sacks and second-hand machinery. These should never be taken into the main mill building before they are disinfected. Even new sacks should be stored in packing rooms where they will not become dusted with the flour and thus become liable to infestation. Insects thrive and develop in flour, particularly in undisturbed, darkened places.

Thorough cleaning is necessary to reduce the pests, and in summer the mills should be cleaned every five weeks. If walls and ceilings are smooth and well painted or whitewashed, they are kept clean more easily and offer no places for flour to lodge or insects to breed. Floors should be concrete and machinery should be placed high enough to facilitate cleaning underneath. A liberal use of air-slaked lime in dark corners or damp basements will serve not only as a repellent to insects but will sweeten the air.

Fumigation with hydrocyanic-acid gas and heating the mills will kill the insects. Where these control measures can be intelligently and thoroughly applied, results can be guaranteed, according to the bulletin. The gas generated from hydrocyanic acid is deadly to man as well as to insects, and precautions must be taken to safeguard the lives of people in and near the building. The work should be done by an expert fumigator. The mills should be made as tight as possible so that the gas generated can not escape before it has a chance to kill the moths. Fumigation can be done between Saturday night and early Monday morning, or within any period of 24 hours' duration.

Heat Treatment Favored.

When the mill is so built that it can be heated, the heat treatment is recommended for killing the moths. Such treatment should be given during the summer and never attempted on windy, cold, or rainy days. Steam heat is the most satisfactory for raising mill temperatures to the killing point, which is from 118° to 125° F. Time should be taken to reach the desired temperatures and the heat should be maintained for several hours to allow it to penetrate all infested parts. This method is recognized as the most effective, practical, and inexpensive of all treatments and it has the added advantage of being absolutely safe but, as with the fumigation treatment, the mills must be so constructed that they can be shut up tightly.

MILLIONS LOST EACH YEAR THROUGH ANIMAL DISEASES

Tuberculosis, One of the Worst Scourges, Thrives in Damp Stables.

Three-Fourths of Ailments Which Often Ruin Valuable Herds Can Be Prevented by Strict Sanitation, Alertness for Contagious Disorders, and Obedience to Rules.

Every year the people of the United States lose over $200,000,000 directly (and no one knows how much indirectly) through diseases of farm animals. This is a large toll when divided on a per capita basis, and when it comes home to the farm stock-raiser who finds a valuable animal dead in the barn, or an epidemic spreading ruin into his herd, the loss is sometimes disastrous. The most regrettable feature of the case is that probably three-fourths of the loss could be prevented.

Five Causes of Disease.

There are five principal causes of disease and death of farm animals—contagious diseases, sporadic disease, parasitic troubles, accidents, and neglect. Contagious diseases can be avoided, or at least their consequences greatly diminished, if farmers will learn to cooperate with the United States Department of Agriculture and the various State livestock and sanitary authorities, who are striving to maintain animal health. Farmers should report promptly to the nearest officials any suspicion of the presence of contagious disease, and they should observe carefully all regulations in regard to quarantine, sanitation, and care of animals, as protection against contagion.

Tuberculosis is one of the worst scourges among animals and it thrives best in damp, dark, ill-ventilated stables. It is less common among animals running at large. Light, dry, well-ventilated stables and dry, clean barnyards or paddocks are essential to the health of farm animals. One valuable point in combating contagious diseases, especially tuberculosis, is to start the herd with animals that not only are free from disease, but are of stock that is not predisposed to disease. Official tests of herds are made on request and through cooperation of the United States Department of Agriculture with live-stock sanitary officials. Purchase of breeding stock from these herds is a wise precaution. Care also should be taken to obtain stock adapted to climatic and local conditions. The other sources of animal loss are largely a matter of intelligent and careful handling.

Sporadic and incidental diseases, such as disorders of the digestive and respiratory tracts, can be avoided largely by proper handling and feeding. The very temperament of the person who has charge of the animals often has much to do with their health. Some people are said to have a "way" with animals. If the hired man neglects and abuses animals, get rid of him. Aside from communicable diseases, the greatest loss can be traced to disorders arising from some form of abuse of the stomach and intestines of animals. A proper balancing of rations has a material influence on the health of live stock. Too much of any food element is likely to result in digestive disorders, thus predisposing the animal to disease.

Parasitic diseases also carry off large numbers of valuable animals every year. They are largely the result of improper housing and neglect. The average farmer can not be expected to have the time and aptitude for study which will keep him apace with the latest developments in feeds and feeding, animal nutrition and medicines, hygiene, and other important matters related to the stock-raising industry. He can, however, avail himself of the benefit of the studies and demonstrations of specialists who have devoted their entire time to these subjects. Every State agricultural college maintains a corps of specialists whose publications and services are available.

Department Offers Aid.

The Department of Agriculture is constantly giving out important information in books and bulletins which may be had on request, and in every State the department has representatives combating animal diseases. It is well to consult a local veterinarian in case of any disturbing symptoms and to report to the State veterinarian or the United States Department of Agriculture, any symptoms which indicate the possibility of an epidemic. The wise breeder is ever on the lookout to prevent disease instead of waiting until a cure is necessary.

TIME FOR PAYING GRAZING FEES EXTENDED.

Secretary Meredith has approved a recommendation made by the Chief of the Forest Service, United States Department of Agriculture, that the stockmen using the national forest ranges be given the option of paying the usual fees at the usual time, or slightly higher fees not later than August 1. Under this arrangement the maximum increase payable by permittees whose grazing seasons begin in February and who take advantage of the full time permitted will not exceed 6 per cent, or at the rate of 1 per cent for each month of postponement.

The live-stock industry is facing unusual difficulties and the new arrangement merely represents an adjustment under which the stockmen who are unable to pay their fees at the regular time can obtain a postponement in consideration of a reasonable increase in fees.

HOW TO MAKE TABLE GRAPES AVAILABLE ALL YEAR ROUND

New varieties of fruit differing from those usually found on the market are always of interest. New varieties of table grapes brought by the United States Department of Agriculture from Europe recently formed the basis of a midwinter demonstration of the keeping qualities of these valuable sorts, new to the American vineyard industry.

The varieties used in this test were introduced by the Department of Agriculture; grown in the vineyards under its direction near Fresno, Oakville, and Colfax, Calif.; packed by its investigators; transported to its experimental cold-storage plant at the Arlington Farm near Washington; and held until midwinter, long after the holiday season, with the result that at least six new varieties of potential commercial value have been demonstrated to possess keeping qualities beyond any hope which the investigators at the department entertained.

While repeated seasonal tests will be necessary fully to determine the value of these varieties under American conditions, the prospect of their proving superior in dessert and keeping quality to the varieties now generally grown appears excellent. In view of the profound changes which the viticultural industry is now undergoing, the lengthening of the consuming season for American-grown table grapes is highly desirable to both producers and consumers. The experiments under way indicate the strong probability that by growing varieties especially adapted to the purpose, and following packing, transportation, and storage methods which have been worked out by the department, our markets can be supplied with American-grown grapes of high quality for at least two months later in the winter than is now the case.

Cowpea hay should be cured with as little exposure to the sun as possible. Too long exposure will cause the loss of the leaves, the most nutritious part of the plant.

Weekly News Letter

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John L. Cobbs, Jr., Chief

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GATHERING INFORMATION ON FOREIGN MARKETING METHODS

The United States Department of Agriculture is collecting systematic and comprehensive information covering the problems of marketing farm products in foreign countries. World markets have a deep and far-reaching influence on domestic markets and prices, but, although approximately 50 per cent of American exports last year consisted of agricultural products, and although the prices of some of the larger staple crops, such as wheat, cotton, and wool, are made in foreign markets, little attention has been given to conditions which American farm products encounter in foreign fields, say specialists of the Bureau of Markets.

SPECIALISTS TEST STRENGTH OF MANY COTTON VARIETIES

Meade cotton is 5 per cent more "wasty" than Sea Island, tests made by the Bureau of Markets, United States Department of Agriculture, reveal. Attempts to determine the relative strength of the Meade and Sea Island cottons also are being made, but have not been completed. Results thus far obtained indicate that in the higher counts the two kinds of cotton are approximately of the same strength.

Tests conducted in Arizona indicated that Pima (American-Egyptian) cotton stored 30 days or longer was from 5 to 15 per cent stronger than that ginned immediately upon picking, depending upon the size or number of yarn spun.

Tests conducted to determine the relative value of Pima cotton grown in California as compared with that in Arizona indicated that Arizona cotton was from 7 per cent to 20 per cent stronger than the California cotton, depending on the number of yarn spun.

Other tests indicated that soil fertilized with ammonia produced better cotton than that fertilized with acid phosphate or sulphate of potassium, and that cotton which had been infected by the pink boll worm was weakened from 33 per cent to 50 per cent.

DEMAND FOR SETS SHOWING COTTON STANDARDS HEAVY

It was necessary to purchase 272 bales of cotton last year in order that the Bureau of Markets, United States Department of Agriculture, might prepare enough sets showing the official standard grades of cotton to meet the demand. From the promulgation of standards for grade and color of upland cotton up to June 30, 1920, a grand total of 1,276 complete white and colored sets, and 515 fractional white and colored sets of practical forms, had been sold.

Since the establishment of the standards for American-Egyptian and Sea-Island cotton and the standards for length of staple, which were promulgated in 1918, the following sets of practical forms have been sold: American-Egyptian, 62 full and fractional sets; Sea Island, 11 sets; length of staple, 22 full and 150 fractional sets.

FOOD INSPECTORS INSTRUCTED TO WATCH NOODLE SHIPMENTS

A yellow streak is an evidence of quality in a gold mine, but it may mean something entirely different when it appears in a so-called egg noodle. Some manufacturers of noodles impart a yellow streak to their product with dye. The only purpose is to make the noodle resemble a real egg noodle, according to officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of the Federal Food and Drugs Act. Food inspectors have been instructed to watch interstate shipments of noodles in order to enable the Department of Agriculture to check this practice, which, under the provisions of the Food and Drugs Act, is illegal.

The use of the dye, which costs little, in place of eggs, which are expensive, is not only a fraud upon the consumer, but it makes for unfair competition among manufacturers, the department holds. It is difficult for reputable manufacturers to meet the competition of unscrupulous producers who substitute a cheaper and less nutritive substance for the genuine and more expensive material.

PROGRESS IN IMPROVING MARKETING METHODS SHOWN

Ever since its institution the Bureau of Markets, United States Department of Agriculture, has realized that certain objects must be accomplished before any generally noticeable marketing improvements can be made. Standards for farm products and the containers in which they are packed must be established; prompt, accurate, and disinterested domestic and foreign market information must be made available to all parties concerned in the process of distribution; impartial inspection must be maintained; the problems inherent in the organization and operation of farmers' cooperative organizations must be solved; the business practices of the various marketing agencies must be improved; accurate and complete data concerning the cost of marketing must be available; and efficiency in handling, storing, and shipping farm products must be increased. In all these directions measurable progress has been made during the last year.

LAST DAY OF HUNTING SEASON.

Under the Federal law, which prescribes seasons on migratory game birds, January 31 was the last day on which wild ducks and geese, coots, gallinules, and Wilson snipe or jacksnipe could be hunted anywhere in the United States. The Federal law provides, however, that the carcasses of birds killed during the open season may be possessed for an additional period of 10 days following the end of the season, provided the State or local laws do not prohibit it. The possession of carcasses of wild ducks, geese, and other migratory game birds in cold-storage plants after February 10 renders the owners subject to prosecution in the Federal courts. The law is administered under the United States Department of Agriculture by the Bureau of Biological Survey.

Cowpea hay is said by specialists of the United States Department of Agriculture to be better suited for feeding to cows than to horses. Partly on this account and partly because of the difficulty often experienced in properly curing the large growth of succulent vines and its coarseness and unevenness in quality, cowpea hay has but little standing in the city markets.

THE RAT—A WORLD MENACE.

By W. B. Bell, Biological Survey, United States Department of Agriculture.

The necessity of a campaign of unvarying efficiency against the common brown rat is an outstanding one. No other animal or insect is so dangerous and persistent an enemy, and no other enemy succeeds in inflicting the damage that the rat annually imposes upon humanity. The rat population of the United States is at least equal to the human population, and the same ratio holds true for practically every country under the sun. The Bureau of Biological Survey, United States Department of Agriculture, places the value of the food and property destroyed annually by each individual rat at $2. Keeping well within the boundaries of conservatism this means that each year, in this country alone, we produce $200,000,000 worth of food to no other purpose than to feed our rats. In another way, 200,000 men in the United States are devoting all their labor to the maintenance of 100,000,000 rats.

Is Efficient Germ Carrier.

But the rodent's enmity is far from being satisfied by this huge economic injury. A frequenter of all the places that are vile and loathsome, the rat is a most efficient germ carrier. The germs of the dreaded "black death" have killed more human beings than all the wars of the world's history, and these germs are introduced into the human system by the bite of a rat flea. In India, no longer ago than 1896, the bubonic plague killed 9,000,000 persons. In Europe, during the 14th century, it is believed to have brought death to 25,000,000 human beings. Other diseases, almost as dreadful, are traced to the common rat. Thus, from the standpoint of public health, as well as from the necessity of controlling the drain upon the public purse, it is essential that the rat be exterminated. Once the extermination is complete, or as nearly so as modern methods will permit, every precaution must be taken to prevent the rat from multiplying and regaining lost ground.

Trapping should be done continuously and systematically at all rat-infested places. Rat poisons, especially barium carbonate preparations as recently developed by the Biological Survey, should be employed. In furthering the destruction of the rat, community or civic organization is of the greatest importance. It does no good to drive the rats from one cellar into the next if they are allowed to breed unmolested in their new quarters. When the campaign is made general the pest is allowed no rest and no opportunity to intrench in a new position. If one pair of rats is left they can reproduce the original number in a little while, as rats breed five or six times a year with an average of 10 to the litter.

Buildings Should Be Rat Proof.

In connection with the extermination campaigns, preventive measures should be employed against the rodent. First among these is the protection of all food supplies. This is of prime importance. The removal and destruction of refuse is the next step in prevention, as abandoned dumps and piles of waste material furnish excellent shelter and food for the rats that have been driven from the houses and cellars.

All buildings should be rat proofed by the liberal use of cement and tin. Rat proofing should be a prominent specification in all new construction and it should be applied to older buildings in the form of repairs. All drain outlets should be sealed with wire cages, or similar protective devices, and at the seaports, where the rat finds entrance to the country, the port authorities should see that all ships are fumigated and every precaution taken by means of hawser guards or otherwise to keep the rats from leaving the ship for the shore, or from passing from one ship to another. These things should be required by State law and city ordinance.

With the food supply locked away from him, and his shelter gone, starvation and exposure will add to the effectiveness of work with traps and poisons, and the menace of the rat will cease to be a real hazard against American lives and property.

FINDS NICOTINE DUSTING COSTS LESS THAN SPRAY

To the sorrow of some of the insect pests which feed on the under side of plant leaves and so escape the effect of poison sprays, the Bureau of Entomology, United States Department of Agriculture, has been conducting experiments with nicotine sulphate applied in dust form. Mixed with kaolin to give the poison bulk, 40 per cent strength nicotine sulphate did remarkable work in controlling melon, cabbage, and pea aphis, onion thrips, and western cucumber beetles. All these insect pests are hard to reach with ordinary sprays, but the floating dust settles upon the under side of the leaves as well as on the surface. The experiments show that much larger areas can be treated in less time than is required by spraying. Moreover, the equipment necessary to apply the dust is much less expensive than a spray outfit and its cost of application is less than by the older method. It weighs less than spray and is more conveniently handled. It can be mixed with arsenate of lead or sulphur for use against insects and fungous diseases.

YEAR'S WORK SHOWS PROGRESS IN FIXING GRADES FOR WOOL

A résumé of the wool standardization work of the Bureau of Markets, United States Department of Agriculture, shows that much progress has been made since the tentative establishment of definite wool grades just a year ago. Following the preparation of a few sets for its field agents and the subsequent press announcement that tentative wool grades had been developed, requests for the sets have been numerous. To date some 260 have been distributed among the bureau's field agents, agricultural colleges, wool-growers' associations, wool dealers and manufacturers, textile authorities, and others interested.

The tentative wool grades as promulgated are based on studies of more than two years' duration. In the course of this study thousands of samples of wool submitted by dealers and manufacturers as their interpretations of the market grades were examined. As the tentative grades, before being put in final form, were submitted to some of the leading wool authorities in the country for suggestions and criticisms, it is believed that little if any change will have to be made when official standards are established.

During the past year investigational and demonstrational work to test the commercial utility of the grades was conducted in 16 States. Before meetings of wool growers and others, demonstrations were given to show the preparation of the fleeces and the proper care and handling of the wool before its shipment to market. In the States of Maine, New Hampshire, Virginia, Kentucky, Missouri, and Arkansas the several export wool graders engaged by the bureau graded approximately 1,800,000 pounds of wool in accordance with the tentative wool grades. This work has been looked upon so favorably by wool producers that requests have been received for a resumption of these activities during the coming season.

"BETTER SIRES—BETTER STOCK" GOES AHEAD

SELLS POOR PUREBREDS AS BEEF.

"I sold as beef two purebred Shorthorn bulls, one undersized, the other of poor conformation." This statement to the United States Department of Agriculture from a Nebraska stockman aiding in the Better Sires—Better Stock campaign, indicates a growing understanding that desirable sires must be of good quality in addition to being purebreds.

BULLS AND ARITHMETIC.

With the growth of interest in purebred sires, the United States Department of Agriculture announces the increasing frequency of reports from live-stock owners of fractional ownership of purebred male animals. Two examples of such ownership from Montgomery County, Va., were recently received by the Bureau of Animal Industry reports. One stockman owned six sires outright, and two-thirds interest in another. A neighbor owned four sires and one-half interest in a fifth. In each case the fractional ownership represented financial interest in a purebred bull.

FINDS WORTH OF PUREBREDS ON GOING BACK TO SCRUBS

There was a man who heard about "better sires better stock" years ago, before the present movement was started. He was so impressed that he thought he would get a purebred bull and have a good herd. The bull he got was a good one, but the next year his herd was no better than before, and he became discouraged. He kept his purebred bull for one more year, then sold it and bought a scrub.

Time went on, and the heifer calves from cows served during those two years when the purebred bull was used grew up and came into milk. To his surprise he found that after all he did have a better herd. But alas, in two years more he found that his herd was growing poor again. The cheap bull was getting in his work. The scrub then died, but his influence remained, just as the good bull's influence remained after he was gone.

At last this farmer saw the point. Again he bought a purebred bull, one whose dam and grandam had high records; and before two years had passed he joined a bull association, so that when he had to quit using his own purebred bull he was able to change off to another bull as good. When the daughters of this bull grew up he found his herd again improving in quality, and this time it kept on improving. Year after year his heifers grew up to be high-class cows, and the owner profited.

PUREBRED SIRES INCREASING RAPIDLY ON FOREST RANGES

Purebred bulls have proved their value for improving range herds, and the number being bought in the cow country of the West is rapidly increasing each year, according to reports to the United States Department of Agriculture. The scrub bull is now blacklisted on the big national forest pastures.

During the season of 1919 three local live-stock associations, the members of which use the ranges of the Sierra National Forest in California, adopted rules for the purchase of purebred bulls. Under a special rule each association was required to place on the range a sufficient number of purebred Hereford, Shorthorn, or Aberdeen-Angus bulls. A committee to purchase and pass upon the credentials of each animal to be turned loose on the ranges was appointed.

Under this plan, during the grazing season of 1920, 105 Herefords, 97 Shorthorns, and 6 Aberdeen-Angus bulls were purchased by the stockmen through their associations and placed upon the range. It is estimated that at the end of the season of 1920 the stockmen had not less than 200 registered bulls on their ranges, resulting in a great improvement in the grade of steers turned out.

The Forest Service of the United States Department of Agriculture assists these local associations in enforcing the rules which require that the same kind and grade of bulls be placed on the same range. Permits to graze on the national forest pastures are refused those who do not conform to the association's ruling and who have not paid their share toward the purchase of the association bulls.

BERKSHIRE BREEDERS BOOST THE BETTER-SIRES CAMPAIGN

An indication of the active and widespread support being given to the better-sires campaign now systematically fostered by the United States Department of Agriculture is illustrated by a proposal recently made by the American Berkshire Association. This association, according to a letter recently received by the department, is suggesting to State Berkshire breeders' associations a plan designed to broaden the market for Berkshire boars and increase the use of purebred animals on farms.

The association is urging the various State organizations to mail circular letters to their members suggesting that breeders exchange purebred boars for grade boars now being used by farmers, pricing the registered boar at a close figure and taking the grade boar at the market price as part payment, the breeder then sending the grade boar to the butcher. In their letter to the State associations the national body points out that every Berkshire breeder who follows this suggestion does three things:

He puts a Berkshire boar on an additional farm.

He provides a means of getting good Berkshire feeder hogs for the market.

He puts the purebred sire on a farm where formerly there was a grade or scrub.

Signs bearing the legend, "Registered Berkshire boar used on this farm," will be furnished by the American association to all farmers who take advantage of this plan.

There is nothing in the plan, say specialists of the United States Department of Agriculture, that does not seem practicable for any other hog breeders' association to use.

BULL ASSOCIATION RELIEVES OVERWORKED COUNTY AGENT

"I was in Mecklenburgh County, N. C., some weeks ago," says a field man of the Dairy Division, United States Department of Agriculture, "and had an opportunity of witnessing an incident which throws new light on the usefulness of the bull-association organization. There is an association in that county, and I was invited to 'sit in' at a meeting of the board of directors. The question of holding a sale came up, and the county agent read a letter he had received from some farmers in another community who wanted to buy stock, and were coming to Mecklenburgh County to see what they could get. The directors appointed a committee to receive them and show them around.

"Thus this piece of business was provided for, and placed in the hands of the right persons. Otherwise the county agent would have had to give up other work he had on hand, and search for some one to whom he could refer the visitors, and go with them. Even then he would not have had the information so readily available as these breeders themselves had it.

"In another county I saw a different thing, which shows how the county agent is loaded down with work where there is

no such organization. He had succeeded in getting a number of farmers in different parts of the county to take up pure breeding, and had placed some good bulls with them. These sires had now been used for two years, and a change had to be made. So the county agent found it necessary to hustle around and arranged exchanges among these farmers to keep the good sires at work; otherwise the owners would have sold them, and might have neglected to buy new ones, and might have lost the use of a good bull. If there had been a bull association in the county it would have attended to the business of exchanging, as one of its regular functions, and left the county agent free to take up other important work."

GOVERNMENT STUD OF MORGAN STRAIN KEEPS UP TRADITIONS

The United States Department of Agriculture's stud of Morgan horses at Middlebury, Vt., contains excellent specimens of the Morgan breed. This fact was demonstrated when Troubadour of Willowmoor, the premier stallion at the farm, won the Morgan stallion class at the 1919 International Show at Chicago. At the 1920 Vermont State Fair the Morgan stallion McMahon was made champion. McMahon is sired by Scotland, a stallion bred by the late Joseph Battell and for the past several years owned by the Department of Agriculture. Scotland and McMahon's dam, Beauty, are both sired by General Gates, for many years at the head of the Government Farm stud. McMahon is a full brother to Heather, winner of the mare championship at the Vermont State Fair in 1916. The Reserve Champion at the last Vermont State Fair was sired by Bennington, who was bred and has since remained the property of the Government. Bennington is also sired by General Gates and out of a mare purchased in Kentucky.

Castor, a gelding bred by the United States Morgan Horse Farm, is sired by General Gates, and out of Babe, by Bob Morgan. Castor finished both the 1919 and 1920 endurance rides of 300 miles, and is still a sound, useful horse at farm work, under saddle, or in light harness.

Dolly, a registered Morgan mare that finished sixth in the 1920 endurance contest was bred on the remount plan under the supervision of the Department of Agriculture, and received her preparation at the United States Morgan Horse Farm. Dolly is sired by Dewey, also a Morgan Horse Farm product, being a full brother to Bennington.

"Best Is None Too Good," Says Stockman Telling His Experience With Purebreds

"I find that a man can not use too good a bull, even on good grade cows. The best is none too good." This is from the letter of a South Dakota stockman forwarded by his county agent to the specialists of the United States Department of Agriculture, in charge of the "Better Sires—Better Stock" campaign. The stockman cites a number of instances from his own experience in raising live stock to show that the profits when a high-class purebred heads the herd far exceed those made when inferior animals are used.

"Three years ago," says this stockman, "my brother and I owned a bunch of good grade cows—just average range animals. We also had eight purebred cows and in order to breed them bought a big purebred bull of best quality. As we did not have full use for him we bred the range cows to him. We shipped some 2-year-old steers and a few 2-year-old heifers to market on the same train in which our neighbor shipped his steers. His animals were about the same as ours and he had a registered bull, but it was just a good average range type. Both lots of cattle were sold on the same day by the same commission firm. Our steers netted an average of $144.80, and the heifers $123.07; our neighbor's steers netted $88. Our bull cost much more than his, but we considered ours the cheaper in the end."

ONE FARMER'S OPINION OF PUREBRED SIRES

"Over 300 farmers in this county (Pulaski County, Va.) have pledged themselves to breed their stock only to purebred sires and have distributed good bulls over the county. In three years our cattle have improved from 50 to 75 per cent. The same can be said of sheep, hogs, and poultry."

A. L. INGLES,
(A farmer enrolled for better sires.)

Brings Better Price.

The writer of the letter relates an experience he had while visiting the Chicago stockyards, which again illustrates the value of good purebred bulls. He says: "A dealer had several loads of our native cattle on the market which he had bought up from parties I know. There were good average yearlings and quite a lot of 'twos' in the lot—a fair sample of our cattle. In the next pen were two loads of Wyoming yearlings that looked as if they were all sired by the same bull and as likely a bunch as you will often see. The dealer's cattle of mixed 'ones' and 'twos' sold at 7 cents and the Wyoming yearlings sold at 11 cents and weighed within a few pounds of the mixed loads. I do not remember the weights at this time, but I figured the price at the time and the Wyoming man received a premium of nearly $28 per head for using a good bull. This would be a total of $1,700, as I figured it at the time, which would pay for a couple of good bulls and leave some cash to his credit besides the fact of having the steers' sisters to use in his breeding herd."

Advises on Buying Bull.

The stockman concludes his letter with some sound advice to all stock breeders and, while he has particular reference to his section of the country, his recommendations deserve careful consideration by stockmen throughout the United States. "With the cost of production high, grass rent high, labor high and scarce, and everything we use at top-notch price," he says, "we can not afford to bother raising a scrub. They will not pay, much less make a living for the owner. After what we have been through the last year, dry season and tight money, my advice to any man is, no matter what breed of cattle he fancies, when he buys a bull, buy a good one and the best is none too good. Do not buy a pedigree unless a really good bull is attached to it. Take plenty of time in selecting a bull and when you find the one you want, buy him. I have spent the price of several bulls in railroad fare and expenses in hunting a bull that would suit me and when I found him I bought him. I have always succeeded in picking out one that has given perfect satisfaction."

CIVIL SERVICE EXAMINATIONS.

The United States Civil Service Commission announces open competitive examinations to fill positions in the Department of Agriculture, as follows:

Specialists in cotton classing, to fill vacancies in the Bureau of Markets; salaries ranging from $2,700 to $4,000 a year.

Nematologist and technologist, Bureau of Plant Industry; salary $2,700 to $3,000 a year.

Agriculturist, irrigated field crops, Bu-

reau of Plant Industry; salary, $1,800 to $2,400 a year.

Field superintendent in insect control, Bureau of Entomology; salary $1,800 to $2,400 a year.

Assistant in nematology, Bureau of Plant Industry; salary $1,000 to $1,800 a year.

Applicants for the above positions should apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Receipt of applications to close March 1, 1921.

GROWERS INCREASE PROFITS BY PROPER COTTON GRADING

Need for more general adoption by communities of a single, superior variety of cotton for each community has been brought out by cooperative graders working under the direction of the Bureau of Markets, United States Department of Agriculture, who last year graded approximately 230,730 bales in Texas, Mississippi, Louisiana, North Carolina, and South Carolina. It is evident, they say, that no marketing association can secure the full benefits of organized effort unless it is handling dependable quantities of a standardized product. For this reason cotton specialists of the department are giving special attention to educating producers regarding the value of classing cotton before sale, the use of market quotations, the growing of better varieties of cotton on a community basis, the depressing effect of inferior staple upon prices, and the losses incident to improper ginning, baling, and storage. They are encouraged to organize for the purpose of securing the benefits of community production and marketing of superior cotton. At some of the towns in which classers were located, it had been the custom to buy all cotton as short staple, but during the past season cotton classed in the course of these demonstrations as a full inch or longer was sold at a premium, thus bringing into the hands of the producers thousands of dollars more than they could have gained under former conditions and emphasizing the desirability of selling acording to actual class. A further result has been the withdrawal from the field of many so-called "scalper" buyers whose profits depend largely upon the ignorance of the grower as to the class and value of his cotton.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended January 29, 1921:

Care of Baby Chicks (reprint). Farmers' Bulletin 1108.

Culling for Eggs and Market (reprint). Farmers' Bulletin 1112.

Baking in the Home. Farmers' Bulletin 1136.

Rice Growing in California. Farmers' Bulletin 1141.

Fermented Pickles. Farmers' Bulletin 1159.

Dodder. Farmers' Bulletin 1161.

Cranberry Diseases and Their Control. Farmers' Bulletin 1081.

Food Habits of Seven Species of American Shoal-Water Ducks. (Professional Paper.) Department Bulletin No. 862.

Economic Value of the Starling in the United States. (Professional Paper.) Department Bulletin No. 868.

The Maine Sardine Industry. (Professional Paper.) Department Bulletin No. 908.

Utilization of Black Walnut. (Professional Paper.) Department Bulletin No. 909.

The Bureau of Chemistry of the United States Department of Agriculture; Organization; Enforcement of Food and Drugs Act; Enforcement of Tea Act; Research Work. Department Circular 137.

Status and Results of Home Demonstration Work, 1919. Department Circular 141.

Statistical Data Compiled and Published by the Bureau of Crop Estimates 1863–1920. Department Circular 150.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1108; Department Bulletin No. 862; Department Circular 137.

STERILIZING MILK BOTTLES VITAL TO CONSUMER'S HEALTH

Too much emphasis can not be given to the fact that only thorough washing, steaming, and drying produces a sterile container for milk and that milk should not be allowed in any other than a sterile container at any time, and particularly if the milk has been pasteurized or otherwise heated.

The washing and sterilizing of returned empty milk bottles to a city milk plant constitutes a big problem. Bottles are received in varying conditions of cleanliness and from the many and varied sources of collection, and it becomes somewhat of an accomplishment to make them sterile containers for milk.

The inoculation from the empty bottle can be reduced to a minimum by thorough washing, steaming, and draining, and as this is possible and highly important from a health point of view no other method should be tolerated.

Placing pasteurized milk in a bottle which has not been sterilized just previously lessens the efficiency of the pasteurizing process and helps to defeat its purposes.

1920 RECORD YEAR FOR HIGH WAGE RATE PAID FARM LABOR

(*Continued from page 1.*)

allowance found among the several State groups, $14.81 in the South Atlantic States, and is equivalent to 87 cents a day. Allowances to the laborer in addition to money wages, as firewood and milk, may modify these somewhat.

LOWEST FARM-WAGE RATES FOUND IN SOUTHERN STATES

Lowest wage rates for farm labor working by the month without board in 1920 were found in the South Atlantic States by the Bureau of Crop Estimates, United States Department of Agriculture. The average for that group of States was $50.56. A little above this was the average of $51.94 for the South Central States. The wage levels for the northern groups of States were much above those averages, as they have been during the 55 years of the record of that bureau. In the North Central States east of the Mississippi River, the average of $70.09 was found for 1920; in the North Atlantic States, $75.54; in the North Central States west of the Mississippi River, $79.79; and by far the highest average was $99.43 for the far Western States.

In individual States there were, of course, departures from group averages. Lowest of all, for hirings by the month without board in 1920, was Mississippi, with the average of $41, and above this, in order, were South Carolina, with $41.80; Alabama, with $42.20; Georgia, with $44; and Tennessee, with $46.

At the other extreme are some of the States of the far western group. The highest State average found was $107 for Colorado and Nevada, and closely below this were the averages of $105 for Montana and Idaho, and $104 for Utah and Washington. In these States were paid wage rates for farm labor hired by the month without board that were about 2½ times the rates paid in the States mentioned as paying the lowest rates, but the agriculture and the crops were not the same in comparison.

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BIG DECREASE IN LIVE STOCK ON FARMS DURING LAST YEAR

At the Same Time the Total Value Declined 26.7 Per Cent.

Nearly 10,000,000 Less Head January 1, 1921, Than on Same Date 1920, According to Estimates Based Upon Reports of Agents of Bureau of Crop Estimates.

Nearly 10,000,000 less head of live stock were on farms in the United States on January 1, 1921, than a year preceding, according to estimates based upon reports of agents and correspondents of the Bureau of Crop Estimates, United States Department of Agriculture. Horses decreased about 602,000 head, or 2.9 per cent; mules decreased slightly, 42,000, or 0.8 per cent; milk cows decreased 298,000, or 1.3 per cent; other cattle decreased 1,880,000, or 4.2 per cent; swine decreased 5,078,000, or 7.1 per cent; and sheep decreased 2,047,000, or 4.3 per cent.

This Year's Totals.

The total numbers on farms and ranges January 1, are estimated as follows: Horses, 20,183,000; mules, 4,999,000; milk cows, 23,321,000; other cattle, 42,870,000; swine, 66,649,000; and sheep, 45,067,000.

The results of the 1920 Census of live stock have been issued for a few States only; the two sets of figures (Census and Crop Estimates) are not made from the same basis, and therefore are not comparable, in that the Bureau of Crop Estimates figures are the result of applying yearly estimated changes to the census figures of 1910, which were taken on April 15, instead of on January 1, as was done in 1920. No attempt has been made to readjust the bureau's 1920 figures to the new census basis in the few States for which census figures have been published. Readjustments will be deferred until the census will be complete for all States.

The total value of live stock has declined $2,271,576,000, or 26.7 per cent during the year, that is, from a total of $8,507,145,000 on January 1, 1920, to $6,235,569,000 on January 1, 1921. This decline is due partly to the reduction in numbers, but more to the lower value per head.

Horses, with a value of $82.45 per head as compared with $94.42 a year ago, are lower than they have been since 1906. The total value of horses is estimated at $1,664,166,000, which is $298,337,000, or 15.3 per cent, less than a year ago.

Mules have declined in price relatively more than have horses, due, probably, to the depression in the cotton States, where mules are largely used. The January 1 price, $115.72, is the lowest value since 1916, whereas the value a year ago, $147.07, was the highest on record. The total value of mules is $578,473,000, a reduction of $162,927,000, or 22 per cent, as compared with a year ago.

INSECT-INFESTED TREES MENACE.

Healthy appearance is of the utmost importance in shade trees, and no agency is more potent in marring the appearance of these trees than are insects. A defoliated or otherwise bedraggled shade tree is not only worse than none at all but, as a result of insect injury, it is a menace to the health or life of similar trees in the neighborhood.

Practical ways of controlling most of the injurious shade-tree insects are known. Farmers' Bulletin 1169 discusses the more important insects affecting deciduous shade trees in the eastern two-thirds of the United States and gives remedies for them.

Milk cows have declined 24.8 per cent in value per head, from $85.11 to $63.97, and in total value have declined $518,228,000, or 25.8 per cent, from $2,010,128,000 to $1,491,900,000. Other cattle have declined 27.3 per cent in value per head, from $43.22 to $31.41; and in total value have declined $587,520,000, or 30.4 per cent, from $1,934,185,000 to $1,346,665,000. All cattle have thus declined $1,105,748,000, or 28 per cent, from $3,944,313,000 to $1,934,185,000.

Swine have declined in value per head 31.7 per cent, from $19.01 to $12.99; and in total value have declined $497,636,000, or 36.6 per cent, from $1,363,269,000 to $865,633,000.

Sheep have declined in value per head 39.1 per cent, from $10.52 to $6.41, and in total value have declined $206,928,000, or 41.8 per cent, from $495,660,000 to $288,732,000.

GREELEY URGES ON CONGRESS NEED OF NATIONAL FORESTRY

Outlines Constructive Program of Far-Reaching Importance.

Public Action Necessary, Says Chief Forester, to Save Remaining Forests of U. S. from Devastation and to Provide for Replanting—Features of Snell Bill Discussed.

Need for public action to save the remaining forests of the United States from devastation and to provide for timber production on lands already laid waste was strongly urged by Col. W. B. Greeley, Chief of the Forest Service, United States Department of Agriculture, at the hearings before the House Agricultural Committee on the Snell Bill.

The bill authorizes and directs the Secretary of Agriculture, in cooperation with the various States or other suitable agencies, to recommend the requirements essential for protecting timbered and cut-over lands from fire, reforesting denuded lands, and cutting and removing timber crops so that continuous production of timber will be promoted. To bring into effect these requirements, and with a view to furnishing a continuous supply of timber for the use and necessities of the public, cooperation between the Federal Government and the States is authorized, on such conditions as the Secretary of Agriculture may determine to be fair and reasonable.

Expenses Borne Jointly.

Federal expenditures under cooperative agreements with States would, under the bill, have to be at least equaled by State expenditures derived either from general taxation or from owners of forest lands under State requirements. The bill also provides for a survey of the forest resources and requirements of the country, for experiments and investigations in reforestation and methods of cutting and utilizing timber, for enlarged purchases of lands for Federal administration as national forests, and for various other features of a national program of forestry. In urging the necessity for action, Col. Greeley pointed out that the essential problem of providing for future needs

is a national one. "New York," he said, "imports nine-tenths of the lumber which she requires. Pennsylvania imports four-fifths, while a large group of Middle Western States import 97 per cent of their wood. The bulk of our paper comes from half a dozen States. The growing of timber on enormous areas of land adapted by nature to that purpose, and scattered throughout 39 States, is just as much a national necessity and just as much a matter for national action as the encouragement of agriculture or the maintenance of interstate transportation.

"The growing of timber can not be left to private initiative alone. Under the bill the Federal Government will assume the technical leadership of the reforestation movement throughout the country. While in the Prairie States cooperation would have to deal chiefly with tree planting, in other States it should cover technical methods of fire prevention, of disposal of débris left in logging, of cutting various types of timber so as to secure a new crop of the kind desired, and the like.

"The largest and most important field for cooperation, however, in all States containing extensive forest areas is in the prevention of forest fires. This is the first step to a continuous supply of timber. Once the vast area of cut-over land suitable for timber production is really protected from forest fires, three-quarters of our forest problem is solved.

"The cost of forest protection should be shared by the public and the private owner. But fire prevention is not an end in itself. The reforestation of timber-growing land and the actual production of timber is the real objective. In no instance should Federal funds be expended unless the State carries out the requirements found necessary by the Federal Forest Service to make timber grow."

NEW SEEDS FROM SIAM.

Seeds of a number of unusual plants have been recently received at the quarantine station of the United States Department of Agriculture, Washington, D. C., from J. F. Rock, one of the department explorers in Siam. Among these are a black-kerneled rice which is said to be extensively eaten by the natives of Siam, and another is a brown-tinted cotton, not hitherto known in this country. The seeds will be propagated in the plant detention station to guard against spreading any lurking plant disease which may have clung to them, and the second-generation seed will be tested out in various parts of the United States.

Making a Success of the Home Wood Lot—Trees to Plant and How to Grow Them

Many plantings of trees have turned out failures because of the selection of species unsuited either to the climate or to the soil. The best trees for planting on a home farm usually are those which grow well in similar soils in the region, according to the recommendation of forest specialists of the United States Department of Agriculture, in Farmers' Bulletin 1123, Growing and Planting Hardwood Seedlings on the Farm, recently published by the department.

In determining what species of hardwood trees should be grown, the bulletin says, the object of growing the trees and their adaptability to the climate of the region should be kept in mind. As illustrations, the bulletin points out that boxelder is not a good tree to plant for timber; the yellow poplar, because of climatic conditions, can not be grown successfully in the plains region of the central United States, and hardy catalpa will not thrive in poor, sandy, or heavy-clay soils.

Trees May Be Grouped.

To a certain extent trees may be grouped as those most valuable for lumber, for posts and poles, for windbreaks, etc. Some of the varieties listed in the bulletin as suitable for lumber are: Ash, basswood, beech, birch, black cherry, cottonwood, cucumber, elm, hickory, sugar maple, red oak, white oak, red gum, sycamore, black walnut, and yellow poplar. Varieties suitable for posts and poles are: Hardy catalpa, coffee tree, red elm, eucalyptus, black locust, honey locust, Russian mulberry, oaks, osage orange, and white willow. Varieties best suited for windbreaks are: Green ash, boxelder, cottonwood, eucalyptus, hackberry, silver maple, Russian mulberry, osage orange, Russian olive, white willow, and yellow willow.

A mixture of two or more kinds of trees in a plantation sometimes is desirable, says the bulletin. For best results, trees such as the cottonwood should be spaced widely, while others, such as black walnut and black locust, have such scant foliage that their shade does not prevent the growth of a heavy sod. A mixed planting of cottonwood with either of the other two varieties mentioned will more completely utilize the ground, increase the yield, and bring about a better forest condition. Frequently, less expensive and less valuable varieties can be planted as fillers with trees that are to make up the permanent planting. Mixed plantings also are desirable as a protection against diseases and insect attack. When chestnut and black locust, which are susceptible to such attacks, are planted among trees not so liable to injury of this kind, the latter will provide a stand of trees if the former are killed.

Utilizes Poorest Soil.

Unless intended for windbreaks, plantations should be located on the poorest soil of the farm, that least suited to the production of agricultural crops. Odd corners cut off by streams or driveways and hillsides or poorly drained soil should be selected. In starting a grove, seedlings one or two years old are preferable to seed or cuttings. Nut trees, such as walnut, hickory, and oak, develop a deep taproot and few lateral feeding roots during their first year. They can not, therefore, be transplanted as successfully as other trees. The nuts or acorns should be planted on the permanent site. Sometimes it is advisable to sprout the nuts before this planting is made. Cottonwood and willow plantations are most easily started with cuttings—12 to 14-inch sections taken from 1 or 2-year-old twigs of living trees. Cuttings should be collected during early winter and buried in moist sand in a cool place preparatory to planting in the spring.

In general, early spring planting is preferable to planting at any other season. As compared with fall planting, it has at least two distinct advantages—the stock has an entire growing season in which to become established before it is subjected to the rigors of winter, and it is not in immediate danger of being heaved out of the ground by alternate freezing and thawing.

WIDER USE OF MARKET NEWS.

Special attention is being given by the Bureau of Markets, United States Department of Agriculture, to the development of a special service for weekly farm papers through which market information, in suitable form, will be placed in the hands of from 4,000,000 to 6,000,000 subscribers. Specialists of the bureau say that this service will supply the need for market information in a simple, convenient form. It will put before the farmers marketing information with the least possible delay and will be so presented that the reader can get the information he desires without reading extensive summaries or long, detailed tables.

Teaching of Fire Prevention in Schools, Object of Widespread Movement Started

Every boy and girl should know how to protect his home and country against loss by fire, according to the Forest Service of the United States Department of Agriculture. To this end a widespread movement has been started by the Fire Marshals' Association of North America to secure legislation in all States making fire-prevention education compulsory in the schools. The act as proposed will, if it becomes law, require teachers in public, private, and parochial schools to devote not less than one hour a month to the instruction of pupils in the ways and means of preventing loss and damage to life and property through preventable fires.

Has Wide Support.

The measure has the backing of the National Association of Credit Men, the United States Commission of Education, and the United States Forest Service. State boards of education, State foresters, civic and commercial organizations, newspapers and magazines, and the public generally, it is expected, will cooperate in support of the proposed legislation. In the Western States, where large areas of national forests are located, field officers of the Forest Service are taking a keen interest in the movement, which, authorities say, will undoubtedly make the task of protecting the forests easier.

The whole question of adequate timber supply for the future needs of the American people, W. B. Greeley, chief forester, points out, hinges on the protection of our forests. "Millions of acres of tree growth," he declares, "are destroyed each year by fires, and as a result of these repeated burnings we have in the United States to-day 245,000,000 acres of cut-over lands that are only partially restocking and more than 80,000,000 acres that are wholly nonproductive. A great majority of the forest fires are man-caused, and therefore preventable. These are things which every child should know, for it is on them that the heaviest part of the future burden of curtailed timber resources will fall."

New Jersey Leads Way.

New Jersey is the only State that has already passed laws making the teaching of fire prevention in all schools compulsory, but it is expected that many of the State legislatures in session this winter will pass similar acts. The United States Bureau of Education and the National Board of Fire Underwriters have joined in the preparation and wide distribution of a fire-prevention manual for school children, entitled Safeguarding the Home Against Fire. Through the efforts of State Fire Warden C. P. Wilbur, of New Jersey, a special edition of this booklet has been issued for use in the schools of that State. This manual, it is said, will doubtless be largely used also in the schools of other States that pass laws making the teaching of fire prevention compulsory.

SUBSTANTIAL ADVANCE MADE IN GOVERNMENT SOIL STUDY

Substantial advance in the study of soils has been made at the United States Department of Agriculture through the installation of apparatus which permits the treatment in ton lots. Many of the important ingredients of soil appear in such relatively small proportions that they are almost imperceptible in small quantities. With the larger apparatus the actual crystalline form of many of the soil constituents can be determined.

One result already attained is a discovery that the salts occurring in the soil are much more complex than has previously been realized. It is also found that the salts in the soil mixture are of the same general type as those in the famous Stassfurt deposits of Germany, and in the beds of former inland seas and lakes that have evaporated and left their salts as deposits. Scientists have realized for years that soil, being the original source of these deposits removed from it by leaching, must contain these ingredients. It is only since the installation of the larger apparatus, however, that accurate data could be obtained.

MOLE A NUISANCE ON FARM BUT HIS COAT IS VALUABLE

"The little gentleman in black velvet" who caused the death of King William III by digging the burrow that tripped the English king's horse is finding his black velvet jacket a coveted possession. Reports from the leading fur dealers in this country indicate that the number of American moleskins marketed during the last fiscal year was 20 per cent greater than for the preceding 12 months. The Bureau of Biological Survey, United States Department of Agriculture, is largely responsible for this increase. In conducting demonstrations in cooperation with the public schools, State extension services, and other organizations, the bureau has encouraged the eradication of the mole from territories where the little animal has become a pest. Boys' and girls' clubs have been given an opportunity to study the trapping methods most effective and also the best way to care for the tiny pelts. The year's catch of moles yielded a peltry value in the State of Washington of $60,000, and, due to the efforts of the specialists, a costly nuisance has been reduced.

HOUSEWIVES IN UTAH LEAD IN COOPERATIVE MARKETING

Utah held first place in cooperative household marketing during the last fiscal year. The work, as organized by the home-demonstration agents, supervised by the United States Department of Agriculture and the State agricultural college, has proved very popular with the women of the State.

In one Utah county 66 local leaders assisted by the home-demonstration agent, made surveys of textile standards and of the durability and service of various pieces of household equipment. After the local groups of women had completed a study of the material and articles, they pooled their orders and placed them with local merchants or wholesale dealers. As a result, a total saving of 35 per cent was made on all money expended on household supplies and equipment.

Another encouraging result of this piece of work is that many merchants have been induced to carry a better grade of goods to meet improved and more critical demands. One local merchant is said to have stated that the standard of his business had been raised 50 per cent by the intelligent buying of the women.

MORE DAIRYING IN NORTH CAROLINA.

When cotton was 40 cents a pound about a year ago, many North Carolina farmers sold part, and in some instances all, of their dairy herds. The money was used in planting more cotton. With the decreased price of cotton, however, county agents report that dairying is coming to the fore again in that part of the South.

In Union County, N. C., it is said that there is not one farmer in the county growing live stock and selling dairy products who can not pay his bills. The livestock farmer has been able, also, to hold his cotton from the market and is still holding it, while many who have not been raising live stock have been compelled to sell at a loss.

Weekly News Letter

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PROGRESS IN TUBERCULOSIS ERADICATION WORK IN 1920

At the end of the last calendar year there were in the United States more than 5,000 accredited herds free from tuberculosis. On June 30, 1920, there were 3,370 such herds and six months later, on December 30, there were 5,013, according to figures just compiled by the Bureau of Animal Industry, United States Department of Agriculture. During the six months' period there has been a marked increase in the number of herds that have successfully passed one test. On June 30, there were 16,599 such herds, and on December 30, 27,842. The department issues a report each month showing by States the number of herds that have been tested, the number of cattle that have reacted, and the number that have been found to be free from the disease.

Minnesota, with 731 accredited herds, leads all other States, with Wisconsin second with 496 herds, and Pennsylvania third with 425. During December, 1,447 herds, in which there were 13,979 cattle, were tested in Mississippi. In Wisconsin 851 herds, having in all 15,411 animals were tested.

EXTERMINATION FACES ELK HERD IN YELLOWSTONE PARK

Have the majority of the elk in Yellowstone Park died from natural causes or been killed during the past year, or are they hiding in some retreat deep in the mountains? This question is worrying the forest officers of the Absaroka National Forest, for on ranges where ordinarily thousands of these animals could be seen, only a very few have been observed this winter.

Just why this is so no one seems to know. One theory is that the open fall and winter has caused the elk to remain back in the higher and more inaccessible portions of the park. Open falls in the past, however, have not caused the elk to abandon their usual customs or habits.

Whether the actual numbers now comprising the Yellowstone band have been greatly lowered during the past year or not, say officials of the United States Department of Agriculture, it is at least true that the shrinkage of the Yellowstone herd during the past five years has been alarming. In 1914, the Yellowstone herd was estimated at about 25,000. In 1917, 17,500 were counted out and if the figures for the present year, estimated by those in close touch with the situation, are true, there remains much less than half this number. In 1919, 3,300 head were killed in the Yellowstone band, the supervisor of the Absaroka National Forest reports.

No herd of wild animals can sustain an annual shrinkage in numbers which the Yellowstone band has, for any length of time, and not face complete extermination within a few years.

NEW INSECT PEST THREATENS AMERICAN CITRUS ORCHARDS

An insect which for some years has been known to occur in the citrus groves of India has recently appeared in Cuba, the Panama Canal Zone, the Republic of Panama, and Costa Rica. There is danger, according to the Bureau of Entomology, United States Department of Agriculture, that the black fly, *Aleurocanthus woglumi*, may invade the United States from these New World colonies, but careful investigations conducted by bureau specialists in the Canal Zone fail to disclose any citrus trees that have been killed by it. The Canal Zone has peculiar climatic conditions, however, which may limit the ravages of the new pest, and it is possible that it will add a heavy burden to the citrus grower if it becomes established in the United States.

There are six stages in the life history of the black fly, namely, the egg, three larval stages, the pupa, and the adult. One generation extends over a period ranging between 45 and 113 days.

The black fly can be controlled by contact insecticides. Five and 10 per cent kerosene emulsions, fish-oil soap, at the rate of 1 pound to 2 or 4 gallons of water, and nicotine oleate, have proved efficacious.

Department Bulletin 885 will put the citrus grower in possession of the latest information concerning the black fly, its life history, and the control measures that may be taken should the insect become established in his grove.

TRUCK-CROP PEST CAUSES MUCH ALARM IN CALIFORNIA

Such apprehension has been caused in California by the strawberry-root weevil, which feeds upon many kinds of truck crops, that quarantine measures are being considered, according to reports to the United States Department of Agriculture. The most common of the three varieties of strawberry-root weevil has done its principal injury in Washington State. In recent years it has been present also in Oregon. As a general feeder it damages practically all kinds of truck crops; the larvae feeding on the roots and the adult insects on the leaves. The pest is confined to the Northern States and Canada, and in these latitudes is found more or less from coast to coast. It is possible for any of the three varieties to get a footing in the mountainous and colder regions of California, but it is not believed that they have yet done so to any damaging extent.

The insect has no wings. This retards its spread somewhat, but it is often carried to new localities in soil attached to plants in shipment. It can be killed to a limited extent with arsenical sprays, and control measures are made easier by the probable fact that it produces only one brood a year.

GOVERNMENT TO EXHIBIT AT AMERICAN BERKSHIRE MEET

The extent to which the Government is cooperating with breeders in their effort to safeguard the live-stock industry is shown by the part the Bureau of Animal Industry, United States Department of Agriculture, is to take in the American Berkshire Congress, which will be held in Philadelphia, February 16, 17, and 18.

The department has arranged to have an extensive smoked-meat exhibit at this meeting and display the approved bureau formulas on this subject, which should be of interest to all swine breeders, the object of this exhibit being to encourage the production of home-cured meat and to show its superiority, also to demonstrate the economical method of cutting a carcass. Addresses will be given by specialists of the department.

The American Berkshire Congress was established about 15 years ago by N. H. Gentry, of Sedalia, Mo., who is known as the dean of the Berkshire breeders.

TEACHING SAFETY FIRST IN SCHOOLS.

By Prof. C. J. Tilden, Consulting Engineer, Bureau of Public Roads, United States Department of Agriculture.

The many requirements for safety will furnish a variety of topics for school children's essays and oral discussions. The dangers of railroad crossings at grade, the economic justification for abolishing them, the importance of an unobstructed view up and down the track as a vehicle approaches, and the disadvantages of sharp turns, etc., are suggestive subjects. Similarly there might also be mentioned the questions raised by street intersections and turns. In every town there are many crossings where the autoist's view is unnecessarily limited by fences, shrubbery, or buildings; or where sharp curves with limited visibility invite serious accidents. Guideposts, markers, and other signs for the most efficient guidance of traffic through thickly settled communities also are part of the bigger and more inclusive topic of the economic importance of safety and guidance—the actual money value of human life and of accident prevention.

Need Enlightened Opinion.

Another question, in solving which the engineer and economist will need the help of enlightened public opinion (and this enlightenment should start in the public schools), is that of the relation of the public highways to railroads and canals. The advantage of long hauls by rail and short hauls by motor truck; feeding into main terminal points by radiating systems of highways; a division of the transportation burden by parallel systems of water, rail, and road transportation, are some of the subdivisions of this general heading.

This listing of topics is not intended to be complete or exact, but merely suggestive. Those which refer to construction could best be utilized when construction work is in progress in the vicinity of a school. Many of the other topics may be studied from maps, of which the students might be required to make tracings or free-hand sketches showing the particular features for which emphasis is desired, or regarding which the exercise is being written. State highway departments often feel the need of a better popular understanding of the problems of road construction, and their officials would doubtless cooperate in a hearty manner. Looking ahead, it is easy to see an actual shortage of men qualified to carry on the work of highway development, so rapid is the growth of the good-road movement. Highway instruction in high schools offers opportunity to State highway departments to develop a body of future citizens equipped with a better understanding of the need for roads, and the problems likely to be met in building them, and, at the same time, to stimulate interest in the profession of highway engineering.

State departments and county engineers can help teachers (1) by assigning members of their staffs to deliver occasional lectures, simple in text and preferably illustrated with lantern slides; (2) by furnishing photographs of highways and construction work for classroom or reference use; (3) by assisting teachers in the explanation of work in progress which can be inspected by classes of students. Many States also issue bulletins or reports which are valuable for reference.

The Federal Bureau of Public Roads has a large amount of material which is available for assisting in school work of this kind. In addition to bulletins, circulars, and other printed matter which will be sent free to teachers and others who are interested, lantern slides and motion-picture films may be loaned, without charge, to schools equipped to use them. Other material, of a graphical or pictorial nature, will be developed from time to time and will be available for use in connection with public-school instruction.

Many Interesting Studies.

But the best equipment for high-school work is a live, wide-awake community which believes in building good roads and keeping them in good condition. Under such conditions there never will be any lack of material for making interesting phases of the economic, social, and constructional problems of highway communication. A collection of maps, some good photographs, and a carefully-chosen list of books and magazines would complete a useful educational outfit. The assumption must, of course, be made that these facilities are at the command of an interested, active-minded and inspiring teacher.

CAMPAIGN AGAINST WEEDS UNDERTAKEN BY DEPARTMENT

The United States Department of Agriculture has set on foot what is intended to be the most comprehensive weed survey ever undertaken. Up to date comparatively little is known of American farm weeds. They are classified in botanies and herbariums, but there are no definite data in regard to their spread; the prevalence of any particular weed in any locality; the amount of annual damage; new weeds, increase of old species; or local methods of eradication.

To supply the need for such data the section of weed investigations has sent a questionnaire to all the more than 2,000 county agents of the department. This questionnaire asks the names of the five worst weeds in each county in order of their importance; the methods, if any, used by farmers to combat these weeds; and what weed problems are especially serious in any particular county.

Comparatively few native American weeds have given farmers serious trouble, but new varieties are constantly arriving in foreign seed and through other sources. Some of these have become such pests that entire farms have been abandoned to them. A canvass of 200 representative eastern farmers showed that an average of 22 days a year is spent at the busiest season in trying to get rid of weeds. Investigations by the Bureau of Plant Industry over a number of years are taken to indicate that cultivation after the seed bed is prepared has no other use than to destroy weeds. If this theory proves correct it will add more heavily still to the annual expense chargeable to weeds.

It is the purpose of the department to use the projected survey as a basis of operation in directing a widespread war on the weeds now here, or the importation of any new ones, and to seek any local eradication methods which may be worth general dissemination.

BOYS AND GIRLS LIKE GARDENING.

Gardening and canning were the two most popular club projects with the New Jersey boys and girls in 1920, there being 71 clubs of each.

Eleven counties in the State have been carrying on club work, with 5,295 boys and girls enrolled for the purpose of learning how to be better farmers and homemakers. Sixteen different kinds of club work were undertaken, including corn, potato, garden, pig, sow and litter, dairy calf, poultry, canning, bread, cooking, hot school lunch, clothing, rabbit, corn testing, sweet potato, and home-making.

Totaled, the value of the products raised amounted to $81,646, of which $23,576 came from the garden clubs and $21,266 from poultry products. The total costs amounted to $32,036, leaving for the State a value of $49,610 above costs.

Garden Owners Should Begin Now to Prepare for Spring Planting Time

Home gardens were boons to thousands of families in the United States last season, and the garden habit seems to have become fixed with a large number of persons.

In most sections the late fall gardens have all been killed by frost and in many cases the débris still litters the ground. Bean poles and tomato stakes, with their burden of frosted vines, are toppled over and give the garden an unkept and ragged appearance. Aside from the aesthetic influence of cleaning up the garden, it is important, specialists of the United States Department of Agriculture say, that all rubbish and dead plants be removed and burned to protect the crops of next season from the insects and disease spores which infest the débris. A few hours of work in the garden now will save serious losses another year. Gather the bean poles, tomato stakes, and any removable trellises or wires, store the good ones until they are again needed; then pull, rake together, and burn all the dead vines and plants left in the garden. If these are too wet or green to burn, they may be gathered in small piles for a few days to dry and then piled together and burned.

Spread Manure in Winter.

Winter is a good time to spread rough manure over the garden. This serves a double purpose, in that it adds fertility to the soil and also protects the soil from washing and blowing. Heavy clay soils should be broken up and left rough and lumpy before applying the manure. The kind of manure to use for this purpose is not important, so long as it is not filled with weed seeds or trash of any kind. Manure in which straw has been used for bedding can be taken direct from the stable and spread on the garden as a surface cover during the winter, the rough part being either plowed under in the spring or raked off and put in the compost heap. The finer part remaining on the ground can be worked into the top soil in preparing the seed bed next spring.

Compost made by piling up sods, manure, and any material having fertilizing value will be needed in preparing special soil for seed beds and for starting plants next spring. Now is the time to make a compost heap. The best method is to obtain a load of manure, prepare a level space 4 by 6 feet, spread 2 or 3 inches of the manure over this space, follow with a layer of sod which has been chopped into pieces with a sharp spade, then additional layers of manure and sod until all of the manure has been used. A few leaves also can be mixed with the sod and manure. It is a good plan to sprinkle a little bone meal or phosphate over each layer. The earth should be banked a little around the edge and a slight drain cut around the pile to keep out surface water. If the materials are dry, it will be necessary to throw a pail or two of water over each layer as the pile is being built.

As a rule, the natural rainfall during the winter will be sufficient to keep the pile properly moistened, and as spring approaches a roof of boards, or other covering, should be placed over the pile so it will not be too wet for use when needed. When the time comes to use it, the compost should be cut from one end of the pile with a sharp spade, then thoroughly worked over and screened before it is placed in seed boxes or in the hotbed.

Protecting Young Trees.

Experienced gardeners keep a compost heap going in one corner of the garden from one year's end to another, and all surplus manure and sod are placed in it. As a consequence, these gardeners always have a supply of good loam for preparing special plant beds or top-dressing a piece of land for the growing of lettuce or other intensive crop.

If there is a particularly good young apple tree or two in some part of the garden, do not fail to clean the grass or weeds away from its base and protect the trunk from mice and rabbits with fly screen or closely-woven galvanized wire. Thousands of young apple trees are lost every winter, in certain sections, from being gnawed by field mice and rabbits. As a rule, the mice work just at the surface of the ground, especially where grass and rubbish is left around the roots of the trees. Rabbits are more likely to gnaw the bark from the trunk above the ground, especially while there is a deep snow and they are prevented from getting green food on the ground. For this reason the protectors should extend at least 2 feet above ground and 2 inches under ground.

Fruit trees that have borne during the last year should be gone over during the early winter, and all mummified fruits removed and burned. Any suckers or shoots which have grown up from the roots or on the trunk of the trees should be trimmed off. It also is a good plan to give the trees a thorough spraying with lime-sulphur solution to kill scale insects. This can be done at any time during the winter, but the best plan is to make one application as soon as the leaves are off the trees and another in the late winter before the buds begin to swell. The old adage that "a stitch in time saves nine" is doubly true in the case of winter care of fruit trees.

LEAFY SPURGE THREATENS PASTURES IN NEW YORK

The invasion of a European weed known as the leafy spurge has become so serious in Orange County, N. Y., the last two years that it threatens pastures, meadows, and such crops as corn and oats. The weed has been known in Orange County for a dozen years, but never before was considered noxious. Its spread in the rich dairy and farming territory of Orange County has been so rapid, however, that the county agent recently requested the department weed specialist to look over the situation, in company with a State experiment station representative. Farmers faced a temperature of 16° below zero to attend the conference, and 10 of them volunteered to try out experimental eradication work on their own farms.

Among the methods which will be tried are cutting patches of the weeds in June and applying crude-dried salt at the rate of 20 tons and 10 tons to the acre, cutting in June and saturating the patches with kerosene, using various fertilizers, mowing before seed time, plowing throughout the year, crop rotation, spraying with iron sulphate solution, spring plowing followed by summer fallowing, fall sowing of buckwheat, and the planting of corn the succeeding spring. A large amount of publicity will be used to enlist farmers in the preliminary fight.

The leafy spurge, whose botanical name is Euphorbia esula, is a plant growing about 2 feet tall, with a strong milky central stalk branching toward the top, and leaves about 1 to 2 inches long. It has inconspicuous flowers, which are surrounded by a number of greenish-yellow bracts and smooth, grayish, oblong-shaped seeds. It is a perennial and poisonous.

The department is making inquiry as to whether the plant has become noxious in other parts of the country. All practicable means will be employed to prevent the further spread of the pest.

For feed the cowpea is especially valuable, specialists of the United States Department of Agriculture say, because it will grow on all types of arable soil, requiring little attention and producing most excellent forage. In addition, it is of great value as a green-manure crop to increase the humus and the nitrogen content of the soils upon which it is grown.

Bull Associations Make Possible Better Sires at But Small Additional Expense

Two years ago a bull association was organized in Webster County, Mo.; and a year later another one in the adjoining counties of Wright and Douglas. The experience of these two associations illustrates the tendencies that such organizations display. A tabular comparison is given below, from which it will be noted that both organizations brought about a great reduction in the number of bulls needed. Before organizing, Webster County had 1 bull for every 17 cows, and Wright and Douglas Counties 1 bull for every 29 cows; but in each locality after they got the association into operation they found 1 bull for every 50 cows was enough.

Value Increased.

Another great change was in the value of the bulls. Before the bull associations were organized the bulls which the members owned were valued at $75 each. After organizing, the bulls purchased and owned by the two associations were worth on the average about $275 each, which is nearly four times as much as the privately owned bulls.

Yet the cost was not much greater per farm. When an individual owns a bull, the value of the bull and the amount of the investment are the same; but in a cooperative association each man pays only a part of the cost. The tabulation shows that the investment per farmer, that is, the average amount that each man had to pay, was about one and a quarter times as much after the organization as it was before, in Webster County, and a little over twice as much in the Wright-Douglas association; but in both cases the value of the individual bull was three and two-thirds times as much. It appears, therefore, that by a comparatively small additional investment the members of these two associations were able to secure very much more valuable bulls.

Both these Missouri associations seem to have considerable influence in encouraging their members to keep purebred cows. The Webster County association started with only 2 purebred cows, but in 1920 there were no fewer than 95. The Wright-Douglas association had no purebred cows at all when it began, but a year later it had 12, a change which, though small, shows progress and may lead to great results in the future.

Comparative Figures.

	Webster County Association.	Wright-Douglas Association.
Date of organization	June, 1918	Oct., 1919
Number of members at time of starting	31	26
Total number of cows at starting	500	200
Number of bulls owned by members before organizing	18	7
Number of bulls owned by associations after organizing	6	4
Cows per bull before organizing	17	29
Cows per bull after organizing	50	50
Average value of bulls owned by members before organizing	$75	$75
Average value of bulls owned by association	$276	$275
Investment per farmer before organizing	$43.71	$20.19
Investment per farmer after organizing	$33.45	$12.31
Purebred cows at time of starting	2	.....
Purebred cows at present	95	12

CATTLE DIPPING IN GEORGIA MAKES NOTEWORTHY PROGRESS

Approximately 6,000,000 cattle were inspected or dipped in Georgia last year and tick eradication made noteworthy progress. The new State-wide law was in effect and greatly strengthened the efforts of progressive stockmen and inspectors.

One provision of this law is that when a cattle owner fails or refuses to disinfect his cattle regularly and properly they are to be dipped at the owner's expense. This section of the law was enforced in 58 cases. Costs totaling $1,585.65 were paid by the delinquent dippers in redeeming their cattle. The law is now better understood by cattle owners and will, it is believed, be even more effective during 1921 than in the season just completed.

Although tick eradication is not actively conducted during the winter months, because ticks breed less in cold weather, preparations are already being made for the 1921 season. An aid which is expected to become very valuable is the support of the work by the county commissioners' courts, many of which have made liberal appropriations for tick eradication and are taking an interest in seeing that their money is effectively spent.

In notifying the United States Department of Agriculture of these conditions, W. M. MacKellar, Inspector in Charge of Tick Eradication in Georgia, is optimistic. He looks for rapid progress of the work. The area released from quarantine during 1920 included 17 counties containing 7,016 square miles. This, added to the area formerly cleaned up, makes a total of 121 tick-free counties, representing 73 per cent of the area of the State. It is noteworthy also that the 121 Georgia counties released from quarantine since the beginning of tick eradication, July 1, 1906, is a greater number than has been released in any other State.

WESTERN STOCKMEN ALARMED AT ALFALFA WEEVIL MENACE

Stock raisers of California have become alarmed at the approach of the alfalfa weevil to its Oregon and Nevada borders. The insect is one of the most destructive alfalfa pests known. For this reason efforts have been made to limit its spread by quarantine, and methods of control have been developed through seven years of experimental work by specialists of the United States Department of Agriculture.

Spraying with arsenate of lead and arsenite of zinc has been found most successful. Arsenate of lead is used at the rate of 2 pounds of powder or 4 pounds of commercial paste to each 100 gallons of water applied at a rate not to exceed 100 gallons per acre. The poison is stirred in a little water until it becomes a thin paste without lumps, then diluted and strained; 2 pounds of laundry soap, which assists in making the solution spread more readily and stick to the leaves, is added.

Control methods are described in Farmers' Bulletin 1185, which may be had upon application to the United States Department of Agriculture, Washington, D. C.

FLORIDA CLUB YOUNGSTERS START RABBIT RAISING

Members of the National Breeders' and Fanciers' Association of America recently donated 30 pairs of purebred and registered rabbits to as many boy and girl club members in Florida. The youngsters who were the recipients were selected by the various county home-demonstration agents in the State. The aim is to encourage the rabbit-growing industry in Florida, and the young owners have been organized into a boys'-and girls' rabbit club.

The gift pair, in each instance, together with a litter, is to be shown at the South Florida Fair this year. The youngsters are to give back to the home-demonstration agent one pair of rabbits from the first litter for redistribution, thereby creating an endless chain. The following breeds were donated: New Zealand Reds, Belgian Hares, Flemish Giants, American Blues, Silver Fawns, and Gray Fawns.

Sudan-Grass Seed Abundant at Low Price—Harvest Twice as Large as Was Expected

Reports to the United States Department of Agriculture from the southern Great Plains, especially Texas, indicate that the Sudan-grass seed crop was exceptionally good last season. Every farmer who attempted to grow a crop of seed was rewarded with a harvest about twice as large as he had been led to expect. This unusual seed crop has resulted in glutting the Sudan-grass seed market, with a consequent reduction in prices. The department advises that Sudan-grass seed can be purchased at the present time in wholesale quantities from reputable seed dealers at from 3 to 5 cents a pound. Some seed growers are complaining that they find it impossible to market their seed for even 1 cent a pound.

Acreage Curtailed.

The acreage of Sudan grass has been considerably curtailed in the past by the fact that farmers were forced to pay 15 to 20 cents a pound for seed. Under present conditions, with an opportunity to buy seed at a low price, it is a good time for farmers in the Central States to provide themselves with a field of Sudan grass next year, which can be used either as an emergency hay crop or a summer pasture. Numerous tests of Sudan grass as a summer pasture in Indiana, Illinois, Iowa, Nebraska, Kansas, Missouri, Kentucky, and Tennessee, have indicated that it will carry a greater number of animals per acre during the summer months than almost any other grass now available. Some care in pasturing is necessary, however, on account of the possibility of prussic acid poisoning. The culture of the grass and its utilization as hay and pasture are discussed quite fully in Farmers' Bulletin 1126.

Another suggestion of practical value to farmers who have become convinced of the value of the grass is that they lay in a sufficient supply of Sudan-grass seed to provide for their needs not only this year, but in 1922 also. The discouragement caused by the failure of seed growers to market their product at a reasonable price will undoubtedly cause a shortage of seed the coming year. This will in turn react on the price, and it is likely that Sudan-grass seed will again be selling at 10 to 15 cents a pound within the next two years. If the seed is stored where it will keep dry, there will be very little loss in germinating power due to holding it over. It is a wise procedure, therefore, for those who are sure they will want the seed next year to make provision for their planting while the price of the seed is low.

ROAD CONSTRUCTION IN 1920 BESET WITH DIFFICULTIES

Every kind of road cost about twice as much to build in 1920 as it did in 1917, according to the Chief of the Bureau of Public Roads, United States Department of Agriculture, and highway construction suffered more than any other class of work through railroad congestion, strikes, labor troubles, and material shortages.

After the war there was a great public demand for improved roads. Many roads had been seriously damaged by war traffic, and it appeared that the return of men from military service would provide an abundance of labor. The army of laborers which was expected to apply for the work did not, however, materialize. On the contrary, there was a distinct shortage of labor, and wages reached the highest levels attained in the history of the country. In 1917, competent labor could be secured for from $1.50 to $3 per day, but the corresponding wages in 1920 were from $3 to $5 for a shorter day's work.

In proportion to this demand there was also a pronounced scarcity of construction materials. Sand, gravel, stone, and cement, and materials commonly used in road work increased in price between 1917 and 1920 from 50 to 100 per cent. Naturally, these increases in cost were reflected in the prices paid to contractors for road work. Gravel roads increased from $4,535 to $7,250 per mile; concrete from $21,165 to upward of $40,000 per mile, and brick roads from $33,000 to $55,000 per mile.

As funds available for road construction are largely limited by statute, or by the returns from taxation, a majority of the States this year have deliberately withheld work, the plans for which had been completed, until they could obtain a greater return for their expenditure.

WILL REINDEER STEAK LOWER COST OF LIVING

Marketing reindeer meat in the United States is one of the newest problems that has been put up to the Bureau of Markets, United States Department of Agriculture, for solution. Alaska has approximately 200,000 reindeer, a number that leaves a considerable surplus over what is needed for home consumption. Specialists estimate that Alaska is ready to market about 5,000 carcasses at present. The fact that the herds have increased from 10,000 head in 1905 to 200,000 in 1920 indicates how soon the marketing of reindeer meat will be a real problem.

During the last few years exports of this meat have increased rapidly. In 1914 only 75 carcasses were shipped out of Alaska; in 1920 1,600 dressed reindeer carcasses were shipped into the United States. It is thought that within the next 15 years there may be between four and five million reindeer, with an annual surplus of 1,000,000 carcasses that must reach a market somewhere outside the Territory. At present prices, this surplus would be worth $60,000,000.

It is reported that a company with its headquarters at Nome has already established cold-storage plants for handling 12,000 carcasses each year. The meat will be held for shipment into the United States.

Distribution costs are high, but production costs are low. At present rates it costs about $140 a ton to transport reindeer meat from Nome to Minneapolis. The Eskimos own 70 per cent of the herds, and the only item of production cost is that of herding the animals. Alaskan reindeer weigh about 150 pounds to the dressed carcass, but the average weight can probably be increased to 300 pounds by cross-breeding the reindeer with the caribou, which is a larger and heavier animal.

FREIGHT AGENTS COOPERATE.

Local freight agents now submit a monthly report of the daily shipments of fruits and vegetables from each station instead of daily post card reports as heretofore. Reports were received by the Bureau of Markets, United States Department of Agriculture, last fiscal year from a total of 10,375 agency stations, including steam and electric roads, boat lines, and express companies. More than 600,000 carloads of approximately 50 commodities were reported in this manner during the year.

The use of salt has been recommended by many successful growers in the mowing of cowpea hay. Although not essential, undoubtedly the hay is improved in palatability, and it may, in the case of hay not entirely cured, assist in preventing fermentation. About 8 quarts of salt are used to 1 ton of hay.

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HAY TRADE FAVORS UNIFORM GRADES, WIDE INQUIRY SHOWS

General Dissatisfaction Found With Present Inspection Methods.

Use of Federal Standards Throughout the Country Would Make for Uniformity of Grades—Inquiries Sent 15,000 Persons Interested in Some Phase of Hay Marketing.

Since the passage by the Sixty-sixth Congress of the law providing for the Federal inspection of hay there has been much discussion among shippers, dealers, and consumers of hay as to the benefits to be derived from such a law.

In order to determine the attitude of the great body of people interested in the marketing of hay toward the provisions of this law, and also to learn just what grades are now used at the various markets and the methods by which they are applied, as well as the market practices relative to the issuance of certificates and like matters, the Bureau of Markets of the United States Department of Agriculture has made a comprehensive survey of the hay market situation throughout the country.

Dissatisfaction Indicated.

In connection with this survey, schedules were sent to a list of about 15,000 persons who were interested in some phase of hay marketing. These schedules requested the opinions of the recipients relative to various factors which are of importance in the marketing of hay, including present standards or grades for hay, terminal market inspection service, Federal hay grades, and Federal inspection.

The schedules returned indicate a widespread and general dissatisfaction with present hay grades and their general application.

While there seems to be more dissatisfaction with the application of the grades than with the grades themselves, many shippers and receivers claim that the grades used in the various terminal markets are based only upon the ideas of the dealers in the markets as to what factors should determine the grades and that due regard is not given to factors which are equally important and with which the producer and shipper must deal.

It is claimed, for example, that timothy hay which would be considered No. 1 timothy by the producer, shipper, and receiver, is frequently technically graded No. 3 or sample timothy because of the presence of a small percentage of weeds for which no allowance is made in the timothy grades, though no bale of hay is without some weeds.

A complete history of the formation of the present hay grades is not available, but they seem to be the result of an effort on the part of the hay trade to standardize the rules and grades which had grown up in the various hay markets based upon the ideas and business practices of the dealers in those markets. Much difficulty seems to have been experienced, however, as the rules governing the various grades have been changed frequently. This is probably due to the fact that the grades have been created by trade practices and have not been based upon a careful analysis of the various factors which really determine the quality of the hay.

Not all hay markets use the same grades or standards and several of the large markets, including New York and Memphis, have adopted grades which meet the ideas of dealers in those markets. The application of the grades in markets using the same grade designations is not uniform. Samples of hay

(*Continued on page 7.*)

CROP ACREAGES COMPARED.

Crop acreage for all crops for which the Bureau of Crop Estimates, United States Department of Agriculture, estimates acreage, had the total of 300,622,000 acres in the census production year 1909, and 352,332,000 acres in 1918, the second year of this country's participation in the World War. This acreage remained almost exactly the same in 1919, but in 1920 the total fell to 346,462,000 acres, or less than 2 per cent. The acreage of these estimated crops in 1920 was only 11,000,000 acres below the total acreage of all crops in 1909.

ROOT ROTS DAMAGE MILLIONS OF BUSHELS OF CORN YEARLY

Meant a Loss of More Than $200,000,000 to 1919 Crop, Estimates Show.

To Cut Down Losses from Disease, Government Specialists Advise Germinating Kernels from Every Ear of Corn to Be Used for Seed—Details of Improved Rag-Doll Test.

Corn, of one variety or another, is our most widely distributed cereal crop. Therefore, any single disease that takes a toll of 4 per cent is a matter for serious consideration. The United States Department of Agriculture estimates the damage done by corn root rots in 1919 at over 125,000,000 bushels. Multiplied by the average price of corn for that year, we have before us the unpleasant fact that these rots exacted a tax of over $200,000,000.

When it is considered that one of the same organisms which causes corn root rot also causes wheat scab and that these organisms carried over on corn stubble may infect a field of wheat the next year, the seriousness increases.

Works Insidiously.

Corn root rots are among the most deceptive diseases known to agriculture, say specialists of the United States Department of Agriculture. They affect the kernels of corn in such a way that while they may germinate they often will produce sickly, diseased plants which may die in early stages or produce infected corn. These diseases weaken the plants at the lower joints, and if they come to maturity the damage is perpetuated.

Theoretically, corn root rot is preventable; practically, it is so to a large measure. If all corn stubble, weeds, and grasses that act as winter hosts could be removed and destroyed, there would be little lodgment for corn root rot. But to carry out such a control measure is not practicable. There is a better, more practical way to prevent the disease, namely: seeing that none but healthy seed goes into the ground, and that the young plants have the privilege of being "born right." There is only one known method

of assuring perfect seed and that is the improved germination test. It is necessary for farmers wishing to avoid corn root rot to germinate kernels from every ear of corn to be used for seed. The simplest method of making a test is by means of an improved rag-doll germinator. This, in its essential features, consists of nothing more than a broad strip of muslin backed by moistureproof fiber paper. Rows of seed kernels are placed on the cloth which is rolled up and left in a warm box. The results are, of course, checked against the ears from which the kernels were taken, and only perfect, or nearly perfect, ears are kept for seed. This germinator is very simple and furnishes a practically complete test.

Bleached or unbleached muslin can be used for the rag doll. The cloth, which usually comes in a 54-inch width, is torn across into 12-inch strips, 54 inches long. Before being used the cloth is boiled, and it should be damp when the seeds are placed on it. This cloth is laid on a strip of glazed paper, a little longer than the cloth, to allow folding over at the ends, fresh newspapers being placed on the table under the paper to avoid infection.

About 8 kernels are then taken from each ear and, beginning at the butt, are laid in rows across the muslin strip, so that when the strip is rolled up and placed in a germinating box the tips of the seed will be downward. One row is made from the kernels from each ear and the rows are spaced so that 20 will go on the strip of cloth. This is then rolled up snugly, but not too tightly, and held with a rubber band at each end, being tagged with numbers corresponding to those of the ears as 21–30; 41–60; etc.

These rag dolls are placed on end in the germinator box, which is about 1 by 2 feet and 18 inches deep, with wire or other partitions to keep the dolls apart. The box has damp gunnysacks on the bottom, and is placed inside of a larger box, the space between being insulated with damp sawdust. The rag dolls are sprinkled twice daily, and at the end of 7 days are taken out, unrolled, and inspected. The appearance of the sprouts is a guide to the quality of the seed. If more than one seed shows signs of infection, the infected ear is thrown out. If the farmer has enough corn it is best to throw out an ear for a single bad kernel.

Destroying the Stubble.

Root rot is carried over in stubble, and every effort should be made to destroy or plow under as much stubble as possible. Increasing the fertility of the soil and crop rotation have also been found beneficial. One difficulty about rotation as a remedy is that root rot affects corn and wheat and in many localities is always present on the farm. For this reason the department is anxious that rag-doll germinators be put into general and intelligent use, and the season started with clean seed.

High Prices Force Manufacturers to Turn to White Mountains for Stocks of Veneer

High prices of southern hardwoods are causing manufacturers to turn to the White Mountain forests as a source of future market supply, according to the Forest Service, United States Department of Agriculture.

High-grade lumber is now so costly as to prohibit its common use as the solid body of furniture and other wood products. This condition is causing manufacturers to resort to the increased use of veneers. Now we find the frame or skeleton of articles ranging from tables to phonograph cases made of common wood veneered with high-quality stock. By veneering it is possible to get 10 times as much surface measure as sawn lumber would yield, since 1,000 board feet of lumber will produce 10,000 square feet of veneer, cut 0.05 inch thick.

More Mills Needed.

The New England forests are capable of supplying the woodworking factories of that region with veneer stock equal in quality to the material used in the South and by the large manufacturers of Wisconsin and Michigan. At present, however, there are but six mills in this region which produce veneer, an insufficient number to even supply local demands.

Veneer mills should be near the source of supply. The White Mountain National Forest of New Hampshire offers just such ideal conditions, says the Forest Service. Here, under Federal management, a continuous supply of high-grade hardwoods is assured, and the New England wood manufacturers near by afford an unlimited market.

The supervisor of the White Mountain Forest at Gorham, N. H., reports that there are a number of excellent chances for veneer mills in the vicinity of his forest. One of these is at Gilead, Me., where the Wild and Androscoggin Rivers join and form an outlet for the hardwood on the slopes of the Wild River Valley. Another fine veneer mill site is at Woodstock, N. H., a central point to all the forested areas on the lower Pemigewasset River. The Forest Service holds a large amount of timber in this region; and of the 23 million board feet recommended for sale during the next five years, there is a large quantity of birch and maple suitable for veneer.

Poorer Grades Used Also.

The Forest Service does not confine sales from the National Forest to veneer logs, but requires the removal of all merchantable material from areas on which cutting is done. A plant established in either of these regions should be prepared, therefore, not only to purchase logs suitable for veneer from operators already on the ground, but should be equipped to make use of poorer grades of material suitable for the manufacture of bobbins or toys, it is said.

FARMER FINDS IMPROVED WAY OF PLANTING BLACK WALNUTS

A simple and successful method of planting black walnut, discovered by a farmer in Indiana, is related in Farmers' Bulletin 1123, Growing and Planting Hardwood Seedlings on the Farm, just published by the United States Department of Agriculture. The specialists say that this method should be equally successful with oaks, hickories, butternut, or any other hardwood species which develop pronounced taproots and in consequence can not be transplanted with any large measure of success from the nursery to the field. This farmer buried the walnuts in a shallow pit where they were subjected throughout the winter to the action of moisture and frost. With the advent of spring the nuts began to sprout. He planted the sprouted nuts on well-tilled land by scooping out a little soil with his hands, placing the nuts in the holes thus formed, and covering them lightly.

In following this plan there are several precautions which should be taken: (1) The pit in which the nuts are stored should be located in a well-drained, shaded spot; (2) the nuts should be protected against destruction by rodents; (3) they should be examined frequently in the spring so that there will be no delay in setting them out soon after sprouting commences.

Copies of the bulletin may be obtained from the Department of Agriculture, Washington, D. C., upon request.

New Grasses May Make Guam Independent of Meat Produced Outside the Island

The introduction of grasses in Guam which are far superior in quality to native species gives promise of a live-stock industry on the island that will make it practically independent of importations of meat. Before the Guam Agricultural Experiment Station was established by the United States Department of Agriculture, the farmers of the island were greatly handicapped in the production of stock because the native grasses were so poor in quality and deficient in quantity that, in some areas, they would not support even a few animals. Of many varieties that have been tested at the station, two—Para and Paspalum—have outstanding advantages. These grasses are described and their cultural methods given in Circular 1 of the Guam Experiment Station, which has just been published by the United States Department of Agriculture.

Meat in Demand.

At present the production of meat in Guam is not equal to local demands, says the circular, while the requirements of the United States Navy and Marine detachments and other nonnative residents seem to assure a market for future maximum production. Local meats are inferior also in quality, largely because of the lack of nutritive forage. The introduced grasses should be encouraged in order that this difficulty may be overcome. They have a larger carrying capacity than the native grasses and, being more palatable and nutritious, cause a quicker and more even maturity of the animals.

Most of the villages of Guam are near low, swampy areas that would be ideal for the production of Para grass, a rather coarse grass, having stems about the size of a lead pencil. It spreads out in a flat manner and develops runners that cover the ground, but as the grass continues to grow the younger stems assume a more erect position. It is very vigorous, and under favorable circumstances, makes a thick growth of from 2 to 5 feet high. It is especially adapted to wet or moist land, and after it is once well started withstands drought remarkably well. If it is cut at frequent intervals and not allowed to form thick, dry mats near the ground, it will remain tender and succulent. From 3 to 10 cuttings a year are possible. The yield is heavy, the lowest at the experiment station for a period covering 50 cuttings averaging 12.16 tons a year per acre. The highest average yield covering a period of 42 months has been 34.92 tons of forage per year.

Paspalum grass has been found to be one of the best pasture grasses for the island. It has given excellent results at the station during the past 10 years throughout both wet and dry seasons. Its ability to withstand extremes of drought and rainfall makes it exceptionally valuable. It readily withstands the trampling of stock during wet weather. In fact, it seems to be benefited by this seeming abuse, for tramping in wet and muddy soil has a tendency to spread the grass by keeping down the tufting and bunching tendency. It has been demonstrated time after time that Paspalum will easily support two or three and in most cases several times as many cattle as the same area planted to native grasses. Cattle that have free range over several hundred acres of native pasture land are invariably in poor condition, and during the dry season many are lost, while a similar area planted to Paspalum carries a herd over in good condition without any loss from lack of nutritive feed.

EFFORTS BEING REDOUBLED TO ERADICATE POTATO WART

Although their efforts to eradicate the potato wart from the 100 acres or less in which it has found lodgment in the United States are as yet inconclusive, pathological experts of the United States Department of Agriculture are continuing an intensive scientific warfare to stamp out the disease. The infection, which has been found in only 17 mining villages in Pennsylvania, West Virginia, and Maryland, is one of the most stubborn with which the department has ever had to cope. Potato wart was introduced by importations of foreign potatoes prior to the establishment in 1912 of the Federal quarantine prohibiting the importation of potatoes from countries where the disease was known to occur. The disease usually completely destroys the crop when potatoes susceptible to it are planted in badly infested soil.

Soil sterilization tests by means of steam and chemicals were carried out in infested gardens in Pennsylvania and West Virginia in 1919 and 1920. The methods tested were: Live steam under an inverted iron pan; a solution of formaldehyde applied to the soil, both alone and in combination with steam and the use of other chemical solutions, including Bordeaux mixture, mercuric chloride, and sulphuric acid. The worth of each method was tested by planting a susceptible variety of potatoes on the treated plats. None of the chemical treatments resulted in complete eradication of the disease, and steam sterilization, while it appeared to be successful in the small trial plats, involved such great expense and difficulty as to leave the practicability of eradication still in doubt.

Additional experiments will have to be carried on before specific recommendations can be made. Specialists hope, however, that some method of treating the soil by heat or chemicals can be devised which will make it possible completely to eradicate potato wart from this country.

The work will be actively carried forward until it is determined whether a satisfactory method can be found.

WART DISEASE OF POTATOES ALSO ATTACKS TOMATO PLANTS

Recent investigations made by the United States Department of Agriculture on the control of the potato wart disease, a European trouble found in this country in 1918, disclosed the fact that this disease also attacks tomatoes. Out of 28 varieties of tomatoes planted in wart-infested gardens in eastern Pennsylvania in 1920, 26 were found to be susceptible to the disease.

Wart is a very serious disease of potatoes, causing practically a total loss in badly infested soil. It attacks the tubers, causing warty outgrowths, which may practically cover or consume the potatoes. Its present known occurrence in the United States is confined to gardens in a few mining villages in Pennsylvania, West Virginia, and Maryland, from which its spread is restricted by State quarantine laws. The disease attacks only the stems and roots of the tomato plant, causing small warts; it probably does not reduce the yield of fruit.

The importance of the discovery of the susceptibility of tomatoes to potato wart lies in the fact that affected tomato plants will serve to carry the disease over from year to year in the absence of potatoes, and to introduce it into new localities through the transplanting of tomato seedlings grown in infested soil. It is not yet known definitely whether all varieties of tomatoes are susceptible to the wart disease, but it is feared that such may be the case. Other plants belonging to the potato family are suspected of being susceptible to wart, and some of these have been tested, but with inconclusive results. These tests will be repeated.

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WILL DEVELOP PLANTS USED IN FIGHT AGAINST LEPROSY

With the progress of the United States Public Health Service in the treatment of the age-old scourge, leprosy, by the use of chaulmoogra oil, peculiar interest attaches to a package of seeds recently received by the Bureau of Plant Industry of the United States Department of Agriculture.

The seeds are those of a tree known as *Hydnocarpus anthelmintica*, and were sent to the department from Bangkok, Siam, by Dr. J. F. Rock, of the University of Hawaii, who was sent to Siam by a body of sugar planters and is now in the plant exploration service of the Department of Agriculture.

True chaulmoogra oil, whose properties have been more or less recognized in leprosy treatment from early Asiatic history, is obtained from the seed of a tree known as *Taraktogenos Kurzii*, which grows in Burma. However, in the latter part of the last century the attention of scientists was attracted to three other trees whose seeds yielded a similar oil. They were *Hydnocarpus anthelmintica*, *H. Wightiana*, and *H. Heterophylla*. In 1904 Dr. Frederick B. Power, now a chemist in the department, and then director of the Wellcome Chemical Research Laboratories in London, succeeded in separating the physiologically active acids in the oil from the seeds of the first two of these trees. These acids, designated as chaulmoogric and hydnocarpic acid, respectively, were identified with the corresponding acids of true chaulmoogra oil. He also prepared in the years 1904–5 the ethyl esters of the acids, which is the form in which the remedy is used in injections by the Public Health Service specialists.

While work done by the medical specialists so far has been with true chaulmoogra oil, the receipt of Dr. Rock's seeds of the Hydnocarpus tree has caused Department of Agriculture authorities to set in motion efforts to propagate the plants for possible future usefulness.

The seeds will be sent to Florida, Porto Rico, and Hawaii for propagation.

INCREASED BUSINESS DUE TO WAREHOUSE BEING LICENSED

Officials of a wool warehouse and storage company in Chicago report that they have received 33,000 consignments in 1920—just six times as many as they had in the preceding year. The four warehouses owned by this concern were the first wool warehouses licensed under the United States warehouse act, which is administered by the Bureau of Markets, United States Department of Agriculture, and company officials say that their increased business is largely a result of this. They feel that the department's approval establishes business confidence. Licensed warehouses have a better standing than unlicensed ones, are regarded more highly by bankers and depositors, and their receipts are good collateral and easily negotiable. Such warehouses provide safe and suitable storage places, and the growers and depositors are afforded credit facilities similar to those extended to other business men. None of the requirements of the act are burdensome or difficult to meet.

FARMERS LOSE MORE THAN WAR-TIME PRICE GAINS

Beef cattle on farms lost in average value per head from January 1, 1919, to January 1, 1921, all that they gained during the participation of the United States in the World War and more than half as much again, according to the Bureau of Crop Estimates, United States Department of Agriculture. The loss occurred mostly in 1920. This has been established beyond doubt by the recent annual investigation of prices of farm animals per head made by the bureau. The average price per head, all ages, of cattle other than milk cows was $35.92 in 1917, $44.22 in 1919, and $31.41 in 1921. On January 1, last year, the farm price was $4.51 below that of 1917, some months before this country declared war.

In the case of swine on farms, the average price per head, all ages, declined in the two years 1919 and 1920, 88 per cent of the gain in 1917 and 1918, and two-thirds of the decline was in 1920.

From 1916 to 1919, the average farm value of the product of corn per acre increased from $21.67 to $38.54. The corn crop of 1920, taking the average value of the product of one acre, fell to $20.93, and this drop not only wiped out the gain of the preceding three years but perceptibly exceeded it. The commonly used percentage of decline since the break in price began, fails to discover this fact, because a percentage of decline from a higher number is not comparable with a percentage of gain during the preceding years, which is based on a comparatively low number.

NEW RECORD FOR INSPECTION OF FRUITS AND VEGETABLES

Approximately 25,500 inspections of fruit and vegetables were made by specialists of the Bureau of Markets, United States Department of Agriculture, in the last fiscal year, which is an increase of 75 per cent over the record for the preceding year. In addition there were 3,150 applications for inspections which had to be declined because the force of inspectors was insufficient to handle the volume of business. The inspections covered 40 different vegetables, 25 fruits, and several kinds of nuts. At the beginning of the year inspectors were located in 29 important marketing centers and rendered service in 150 other markets in adjacent territory. The service is used by shippers, carriers, and receivers for the purpose of obtaining exact information to be used in settling transit losses and differences of opinion as to quality of the products involved. The total fees received for fruit and vegetable inspections during the fiscal year amounted to approximately $57,000, this sum being turned into the Treasury as miscellaneous receipts.

To live in too dry an atmosphere is unhealthy and adds to the doctor's bill. Statistics show that about one-third of all deaths in this country have been due to diseases of the throat and lungs. Fresh, clean, pure, humid air as found out of doors is the treatment generally prescribed for such ailments; and until people understand the need for the proper kind of air in the home, especially during the seasons when the doors and windows are kept closed, the recurrence of such discomforts are to be expected, says Farmers' Bulletin 1194, recently published by the United States Department of Agriculture.

9,630 MILES OF ROAD TO GET FEDERAL AID

By T. H. MacDonald, Chief, Bureau of Public Roads, United States Department of Agriculture.

Federal aid for the construction of 9,630 miles of national highways has been approved by the United States Department of Agriculture. Up to September 30, 1920, approval had been given for 855 projects, which form links in one or the other of the 24 marked trails which have been laid out by private associations to cross the country from East to West and North to South.

The mileage which will be constructed with Federal aid on each of the several trails is shown in the following table:

Name of highway.	Length Federal aid approved projects.
	Miles.
Dixie Highway	895
Ozark Trails	294
Yellowstone Trail	455
Bankhead Highway	963
Meridian Highway	677
National Old Trails	855
King of Trails	474
National Parks Highway	617
Theodore Roosevelt International Highway	425
Jefferson Highway	604
Lincoln Highway	706
Old Spanish Trail	516
Mississippi Valley Highway	237
Dixie Overland Highway	259
Jackson Highway	191
Pacific Highway	183
Roosevelt National Highway	311
Colorado to Gulf	22
Bike Peak Ocean to Ocean	319
Atlantic Highway	140
Miscellaneous	452
Total	9,630

The extent to which Federal aid has been applied to the trails varies in the different States. Naturally, the Western States are using much more of their Federal apportionments in developing roads of this character than the Eastern States. This is due to the fact that the routes in the Eastern States already had been improved to a large extent before the roads were selected by the pathfinders. This was not true in the West, where long stretches of the selected roads were still in an unimproved condition when they were designated.

Nevada Leads in Use of Federal Funds.

Nevada leads in its use of Federal funds on roads of this character. Eighty-three per cent of its entire mileage of approved Federal-aid roads lies on one or the other of the trails which cross the States. On these roads Nevada will spend 90 per cent of the Federal money which has been granted to her.

Indiana is a close second, with 80 per cent of its entire Federal-aid mileage and 83 per cent of its money aid applied to the construction of the trails; and Oklahoma, with 76 per cent of its mileage and 81 per cent of its Federal funds, is not far behind.

Florida takes the lead in the percentage of its funds which will be used for trail building, with 94 per cent of its Federal allotments so applied; but this amount will be spent for only 56 per cent of the mileage which has been approved in the State.

In addition to the above, the States of Illinois, Kansas, Montana, New Mexico, Utah, and Washington are each using 50 per cent or more of their Federal money for the upbuilding of the trails.

NEW DEVICE CLEANS SMALL GRAINS AT THRASHING TIME

A new device known as an aspirator has been designed by specialists of the Bureau of Markets, United States Department of Agriculture, for cleaning wheat and other small grains by removing smut, dust, and dockage at the time of thrashing. This device is attached to the grain-delivery sprout, and tests indicate that it removes approximately one-third of what ordinarily is classed as dockage. The use of this device will enable farmers to keep for feed a part of the seeds and other foreign material ordinarily hauled to the elevator and lost to the producer; it also improves the quality of grain by removing from it a large part of the smut dust and objectionable foreign material. A recleaner, for attachment to the deck of thrashing machines, also designed, gives promise of being efficient, it is said.

CLEANING A COUNTY OF HOG CHOLERA.

A county free from hog cholera this year is the goal to which swine breeders in Steuben County, Ind., are working under the guidance of the local county agent and the district veterinarian of the United States Department of Agriculture. As a result of a persistent campaign for the control of cholera and strict organized effort to eradicate it, there has been a remarkable decrease in the disease in the county during the last two years. In 1917 the loss from cholera in the county, according to the county agent, was about $10,000. In 1918 it was a little less than $5,000, and in 1919 it was about the same. In 1920, however, only three cases occurred in the county, which leads the swine breeders to believe that if their efforts to control the disease are continued cholera can be practically eradicated.

CALIFORNIA PRODUCED LESS FRUIT AND NUTS IN 1920

With the exception of oranges, lemons, and cherries, California's specialties in fruits and nuts showed less production in 1920 than in 1919, according to the Bureau of Crop Estimates, United States Department of Agriculture. The orange and lemon crop of the State totaled 18,700,000 boxes in 1920, for 3,625,000 boxes more than in 1919. Cherries increased from 12,400 to 15,000 tons. Prunes declined from 130,000 to 95,000 tons, apricots from 175,000 to 115,000 tons, raisins from 182,500 to 180,000 tons, table grapes from 180,000 to 160,000 tons, wine grapes from 400,000 to 380,000 tons, walnuts from 28,100 to 21,500 tons, figs from 11,000 to 10,000 tons, almonds from 7,000 to 5,500 tons, and plums from 42,000 to 35,000 tons.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended February 12, 1921:

Growing and Planting Hardwood Seedlings on the Farm. Farmers' Bulletin 1123.

Plans of Rural Community Buildings. Farmers' Bulletin 1173.

An Agricultural Almanac for 1921. Farmers' Bulletin 1202.

How Teachers May Use Farmers' Bulletin 1087—"Beautifying the Farmstead." Department Circular 155.

How Teachers May Use Farmers' Bulletin 1148—"Cowpeas: Culture and Varieties." Department Circular 157.

How Teachers May Use Farmers' Bulletin 1121—"Factors That Make for Success in Farming in the South." Department Circular 159.

Cotton Culture in the San Joaquin Valley in California. Department Circular 164.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1173; Department Bulletin No. 862; Department Circular 164.

Combining to Fight the Grasshopper With Poisoned Bran on Pacific Coast

There is nothing so good as poisoned bran for taking the hop out of a grasshopper and there is no better way of buying and distributing the bran than through a community organization, specialists of the United States Department of Agriculture find. In the areas where the grasshoppers come down on the farm crops like all the plagues of Egypt there should be grasshopper-fighting organizations, just as there are fire-fighting units in every city. Fighting a grasshopper invasion without the help of the neighbors is like trying to put out a fire in a powder factory with one bucket of water.

In the Pacific States the vast, uncultivated areas of mountains, foothills, and grasslands afford ideal breeding grounds for at least eight common species of grasshoppers. Undisturbed, the pests can mass their forces in the spring and be ready for a descent upon the alfalfa fields and cultivated crops of the farmer when weather conditions permit. There seems to be little hope of destroying the grasshoppers in these isolated breeding areas and for that reason specialists of the Bureau of Entomology, United States Department of Agriculture, maintain that it will be many years before the grasshopper menace disappears from the West. But, while the eight plagues can not be exterminated at their source, they can be met with a systematic, well-directed barrage of poisoned bait, fire, and other weapons for control when they attempt to invade the cultivated fields.

Preparing for the Attack.

Every locality should have an organization fully equipped and prepared to meet the grasshopper onslaught. All preparations should be made early in the spring, before the insects have left their breeding grounds. The organization should be directed and controlled by efficient and energetic leaders, and it ought to have the cooperation and support of every farmer in the community as well as the landowners who hold title to the remote areas from which the plague spreads.

An equitable method of raising funds for the work can be arranged if every landholder is taxed on the basis of the acreage he holds or operates. The funds should be collected and placed at the disposal of a good business man who will know how and where to go about buying poisons and other supplies when they are needed, without the necessity of untangling red tape. Sometimes it is advantageous to fight the grasshopper army with fire, and it is often necessary to spread poisoned bait upon the property of nonresident landowners. Here are two points where legal advice is desirable, and the leaders should know their exact rights and limits in these matters before the time comes for them to act to save the crops of the community.

If the district is divided into defense areas and each area put under the supervision of a man who knows grasshopper habits and how to use the weapons which the organization has put in his hands, there will be no waste of materials or effort when the foothills disgorge their hungry hordes. Lastly, the wider the cooperation the better the results will be. It does no good to drive the hoppers from one district if they are allowed to settle and feed upon another—passing the pest along to the other fellow does not afford permanent relief, and it puts an extra hardship upon one's neighbor. The assault should be simultaneous throughout the whole infested area; farm should cooperate with farm, village with village, and county with county, so that every leap that the hopper makes to escape the frying pan will land him in the fire, the specialists say.

Eight Species in West.

There are at least eight species of grasshopper commonly found in the Pacific States. Some of these are winged, some are not; some prefer one variety of food, but altogether, when seasonal conditions are favorable, they can destroy any crop that the Western farmer grows. The habits and characteristics of each species are described in Farmers' Bulletin 1140, Grasshopper Control in the Pacific States, which may be had upon request of the United States Department of Agriculture, Washington, D. C.

In addition to a brief description of the pests, the bulletin gives the recipes for mixing the most efficient poisons, when to spread, and how to place the bait so as to avoid injury to live stock. Special control measures are required to meet different geographical conditions, and the publication presents the methods that have proved most effective after five years of experimentation.

WISCONSIN HOLDS MARKET CONFERENCE.

Growing interest in marketing as a solution of many farm problems which have arisen in recent months is shown in the number of marketing conferences being held. During the first 10 days in February, Wisconsin farmers held a "Get-Together Market Conference" at the State College of Agriculture. Many phases of the marketing of farm products and farm finance were discussed. L. B. Burk, of the Bureau of Markets, United States Department of Agriculture, who recently returned from South America where he investigated the market for pure-bred live stock, addressed the conference on the live-stock trade with South America.

May Issue Permits for Importing Rhododendron and Azalea Seedlings

After a hearing held February 1 at the Department of Agriculture on the importation of Rhododendron ponticum and Azalea ponticum seedlings to be used as stocks for grafting, the Federal Horticultural Board of the United States Department of Agriculture indicated that it will issue special permits for the importation of seedlings of three years' growth or under of these two plants for the period terminating June 1, 1922. It was represented that such seedlings were not available in the United States and could not be grown from seed to a grafting size in this country within a period of two or probably three years, and that unless such seedlings could be imported these plants would be absolutely unavailable to the American market for this period. It is expected that after June 1, 1922, it will be possible to supply further needs from home-grown stock. This action was taken as a result of this conference and is supported by the unanimous request of the Ornamental Growers' Association, representing the principal growers of hardy ornamentals in the United States, and with the distinct understanding, which was agreed to by this society, that this action would not be taken as a precedent for demands for similar entry of seedlings or lining out stocks of other ornamentals. The entry of these plants under special permit will be surrounded with the same safeguards which apply to other special permits issued under the quarantine.

A rough practical test for determining whether the air in a room is too dry is to observe the inside of windows on a cold day. If frost forms freely on the inside of the glass, say specialists of the United States Department of Agriculture, there is no doubt but that the inside air has sufficient humidity. If there is no sign of frost the air is likely too dry.

Growing Trees from Seeds Recommended as Among Best Ways to Start a Forest

Perhaps the cheapest and frequently the best way to start a forest plantation is to collect seed from hardwood trees and grow seedlings, say forest specialists of the United States Department of Agriculture in Farmers' Bulletin 1123, Growing and Planting Hardwood Seedlings on the Farm, just published by the department. The collected seed, says the bulletin, will be fresh and the seedlings grown from it should be thoroughly acclimated so far as climate is concerned.

Should Be Collected in Autumn.

Seed should not be collected before it is ripe, and this means for most kinds of seed that the work should be done during autumn, usually after frost. Collecting may be extended into the winter for such species as ash, catalpa, honey locust, sycamore, and others which retain the seed on the trees until that time. A few varieties of seed, such as elm, silver maple, red maple, willow, and poplar, ripen during the spring or summer and should be gathered promptly before they are scattered.

Middle-aged trees growing in the open, where they have been permitted to develop broad, spreading crowns, ordinarily produce seed in greater abundance than trees growing in a dense forest. The fruit of some hardwood trees requires special treatment to separate the seed from the fleshy covering, pod or hull before it is planted.

The best time to sow seed, either in the nursery or in the permanent planting site, is soon after it is ripe, but when this is not possible the seed must be stored until spring. If this is done, the seed must not be allowed to dry out excessively, because this impairs its power to germinate. Seed should be stored in a cold place.

Loamy Soil Preferable.

When the seed is to be planted a good, well-drained, preferably loamy soil should be selected. Proximity to the farm dwelling is desirable, because rodents are less likely to be abundant there. Preparation of the seed bed should be similar to that of getting the soil ready for a vegetable crop. Except on commercial plantings, where the seed is sometimes sown broadcast, it is best to plant with a drill in rows sufficiently far apart to permit horse cultivation. With small or thin seed, such as that of birch, elm, or sycamore, best results will be obtained by sowing broadcast rather thickly over the beds, pressing the seed into the loose soil with a board and covering it very lightly with soil and a light mulch of leaves or straw. When the seedlings are 10 or more inches in height they are large enough to be transplanted to the field. Most of them reach this size in one growing season. In digging them care should be taken to injure the roots as little as possible. Injured portions of the roots should be cut off with a sharp knife. The seedlings should not be dug until the time for planting them in their permanent location, for exposure of the roots to the air for any length of time will kill them.

HAY TRADE FAVORS UNIFORM GRADES, WIDE INQUIRY SHOWS

(*Continued from page 1.*)

obtained from those markets indicate a wide range in the quality of hay upon which the same grade designation had been applied.

Not Available to Buyer.

Certificates of grade issued by official inspectors at the various markets are not available to buyer and seller alike, but are subject to the rules of the exchange or association by which the inspector is employed.

The schedules returned by distributors in consuming territory indicate that in practically all instances it is impossible for them to obtain certificates of grade for the hay which they buy of the wholesalers or dealers in the terminal markets, while on the other hand, shippers to the terminal markets maintaining an inspection service are charged an inspection fee of from 50 cents to $3 per car on hay shipped to those markets and, according to the rules of the markets, must accept settlement on all hay sold by grade on the basis of the grade designated upon the certificate.

In many markets, however, the certificate does little more than show that the hay was not of the grade sold and does not specify the amount of each grade of hay contained in the car covered by the certificate, so that in effect the shipper is paid on the basis of the lowest priced hay in the car.

The conditions existing at present in respect to grades and the grading of hay are comparable to the conditions which existed in the grades and grading of grain before establishment of Federal grades for grain and of Federal supervision of inspection—and it is the opinion of a large percentage of those interested in the marketing of hay that the establishment of Federal standards for hay and of Federal inspection will eliminate many of the difficulties now experienced in the marketing of that commodity.

Favor Federal Grades.

Of those replying to the questions on the schedules sent out by the Bureau of Markets relative to Federal grades and Federal inspection of hay, 87 per cent favored Federal grades and 84 per cent favored Federal inspection.

Federal standards are favored principally because of the fact that their use throughout the country would make for uniformity of grades, and buyers then could know that when a certain grade of hay was quoted from a certain section of the country the same character of hay was being offered as that from other sections when a like grade designation was stated.

It is also felt that Federal grades would probably be more explanatory than some grades now in use and would describe more accurately the character of the commodity to which the grade was applied. This feeling is no doubt based on the experiences of the trade with Federal standards for grain and cotton, the uses of which are proving so satisfactory to all agencies interested in the marketing of those commodities.

The Grades Committee of the National Grain Dealers' Association reporting before the National Convention of 1920 stated: "There is such general harmony and satisfaction throughout the grain trade regarding the present standards that your committee has no resolution, criticisms, nor suggestions to offer to the convention."

The inspection of hay by Federal hay inspectors under the supervision of the United States Department of Agriculture is favored because that appears to be the only impartial agency qualified to undertake such an important task. Such inspectors would be interested only in the quality or grade of the hay and in the assigning of the proper grade designation. They would have no pecuniary interest in the hay nor any business relations in regard to salary or other compensation with anyone interested in the marketing of the hay. All Federal inspectors would be subject to the same regulations respecting the application of grades and the issuance of grade certificates and will have received the same training in preparation for their work.

Available to All Parties.

The law providing for the Federal inspection of hay makes such inspection

available to all interested parties, so that shippers and receivers, as well as dealers in terminal markets, may have the protection which such an inspection and certification of grade provides.

Work on the preparation of Federal standards for hay is progressing rapidly at the hay standardization office located at Alexandria, Va., and the department will be prepared to establish a hay inspection service at several important hay markets as soon as funds are made available for the work.

DIVERSIFIED FARMING GAVE BEST CASH RETURNS IN 1920

In the price decline of their products during the latter half of 1920, farmers in most of the upper Mississippi Valley States and in some of the States east of Texas suffered more severely than elsewhere. The value of all crops of 1920, as determined by the Bureau of Crop Estimates, United States Department of Agriculture, is below the average of 1914–1918 by 25 per cent in South Dakota, by 23 per cent in Illinois, by 20 per cent in Nevada, by 19 per cent in Georgia, by 18 per cent in Minnesota, Iowa, and Montana, by 17 per cent in North Dakota, by 15 per cent in Indiana, by 14 per cent in Nebraska, by 12 per cent in Louisiana, by 9 per cent in Mississippi, by 3 per cent in Ohio, and by 2 per cent in Missouri. Generally speaking, wheat, corn, and cotton, where predominating crops, caused the decline in the total value of all crops.

On the other hand, the highest crop values for 1920 in relation to the five-year average are found in California and Oregon, some of the Mountain States, all New England, New York, New Jersey, Pennsylvania, North Carolina, and Wisconsin. Diversification of production avoids having "all the eggs in one basket."

Anthracite coal of pea size stands first among fuels for house-heating purposes, according to Farmers' Bulletin 1194, recently published by the United States Department of Agriculture. Other coals, in the order of their desirability, are given as follows: Buckwheat, chestnut, stove, egg, and furnace; gas-retort or metallurgical coke in pieces one-half inch to 3 inches through; coal briquettes, 2 to 3 inches in diameter; screened Pocahontas (semibituminous) coal, over one-quarter inch and up to 3 or 4 inches in diameter; and sized bituminous coal in pieces one-half to 3 inches across.

Rural Housewives Are Taught to Apply Business Principles to Daily Tasks

Home demonstration work, though comparatively new, is looked upon as permanent, so beneficial have been the results obtained by home demonstration agents working in rural homes. The fundamental purpose of this work, according to a report just issued by the United States Department of Agriculture, is to assist the rural housewife to apply business principles to her daily tasks for the purpose of making the farm home as efficient as the farm, thereby producing a more satisfactory and permanent type of rural life. The report referred to is Department Circular 141, which deals with the results of home demonstration work in the 33 Northern and Western States.

Became Cooperative Movement.

The work actually began in August, 1914, when an agent was appointed in Erie County, N. Y., on State funds. In 1916, it became a cooperative movement supported by Federal, State and local funds. During that year four agents were appointed. In 1919 the number had grown to more than 600. Then war emergency funds were cut off, and in the following year the number dropped to 286. Although in this one year the force of workers as well as State and Federal funds were reduced nearly one-half, the appropriations made by the local people for home demonstration work nearly doubled, and agents were retained in direct response to requests from the people whom they served, according to the circular.

Home demonstration agents afford an avenue by which the State agricultural colleges and the United States Department of Agriculture offer the practical results of their research and experiments in home economics to housewives of the country. These agents encourage the rural housewives to bring from their store of practical knowledge and experience the lessons they have learned in home management that will be valuable to other women in the community, and so help to make this information available to all. The home demonstration agent is a teacher who makes liberal use of practical demonstration rather than the lecture or text book.

The most successful home demonstration agents, according to the circular, aim to train local leaders who, by putting the best practices into their own homes, extend the instruction to larger numbers of women. At least two-thirds of the agent's time is spent with farm women in their homes, discussing the varied problems of housekeeping and other matters in which farm women are interested. Aside from interesting women in better home management, modern conveniences, food production and preservation, better food for the family, home nursing, and the selection and making of clothing, the agents are devoting their efforts to promoting community enterprises.

Three types of such enterprises are developed: The economic type which includes food preservation, the hot school lunch, cooperative laundries, cooperative buying and selling associations, labor-saving devices, and salvage shops. The social type is concerned with such things as recreation centers, civil improvements, and rest rooms. The educational type embraces farm home tours, libraries, and magazine circles and the like.

Local Aid Needed.

A county organization in extension work which desires the appointment of a home demonstration agent should first communicate with the extension service at the State agricultural college, or with the agricultural agent in the county, the circular suggests. To supply that share which is required of the local organization, there has been organized within the past two years in the majority of the 33 Northern and Western States what is popularly known as the "family" or "new" farm bureau. This is an association of people interested in rural affairs, the membership of which comprises men, women, and young people who generally pay a membership fee.

FARMERS' BULLETINS USED IN SCHOOLS.

Rapid developments in agriculture are resulting in the use of Farmers' Bulletins of the United States Department of Agriculture for classroom use in schools. Especially the formation of live-stock clubs among school children has occasioned a demand for information not yet covered by suitable textbooks. Farmers' Bulletin No. 1135, The Beef Calf, Its Growth and Development, is now being used in the Kansas Agricultural College in the regular beef-production courses. In Georgia and West Virginia the same bulletin is used in instruction of beef-calf club members. In West Virginia it is used also in the regular farmers' correspondence and short courses over the State.

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FIRE TRAP IN THE OLYMPIC FOREST CREATED BY CYCLONE

Timbered Region 75 Miles Long by 30 Miles Wide Beaten Down by Tornado.

Several Billion Board Feet of Hemlock and Spruce Laid Waste, January 29, in the Most Disastrous Storm Affecting Forestry or Lumbering.

The greatest fire trap known in the history of the United States resulted from the cyclone which swept the forests of the Olympic Peninsula in the State of Washington on January 29, according to telegraphic reports received by the United States Forest Service.

"A tremendous tornado," states Acting Forester E. A. Sherman, "blew down timber estimated at five to eight billion board feet, in a strip 75 miles long and 30 miles wide, one billion board feet of which is within the Olympic National Forest. If the loss is as great as announced, and latest reports tend to increase rather than to diminish the extent of the catastrophe, this is the greatest disaster ever recorded in the annals of forestry or lumbering."

A wind velocity of 132 miles an hour was recorded at the North Head Station of the Weather Bureau, near the mouth of the Columbia River, which was partly destroyed by the storm. The observer at this station estimates that after his instruments were wrecked the wind increased in strength to 150 miles an hour. The highest wind velocity ever recorded previous to this date on the Pacific coast was 144 miles an hour at the Port Mendocino Station in California in 1886.

Chance for Salvage Small.

"The wind-thrown timber," said Mr. Sherman, "which, reports state, lies in a tangled mass over an area of 2,250 square miles, is largely western hemlock and spruce, both of which are subject to rapid decay. Transportation is lacking for much of this region, and it is doubtful whether any considerable proportion of the timber can be salvaged unless prompt action is taken. The stand was exceedingly heavy. Where the full force of the wind was felt practically every tree was thrown down, and all roads, trails, and telephone lines were completely obliterated. Much of this destruction is on land owned by private individuals and large timber companies.

"Forest Service field officers report that, as far as is known, no one was killed by the storm, although there were many narrow escapes. A large number of buildings were destroyed and some cattle killed. It is believed that many of the elk which inhabit this region were killed or if not killed are hemmed in by the down timber and débris and will slowly starve. The storm zone reached entirely through the best winter feeding grounds of these animals.

Fire Danger Is Enormous.

"If fire should ever gain headway in this devastated area, the most stupendous conflagration ever known in this country would result. The topography is very broken and the blow downs are in part at least known to be 'spotty,' with much fine timber uninjured. Fire would not only destroy all these islands of timber, but would seriously endanger a vast surrounding stand. Fifteen billion feet is exposed in the adjoining part of the Olympic National Forest, besides large amounts on State and private lands. The destruction would be likely to exceed even that of 1910, the most appalling fire

(*Continued on page 8.*)

BURN CHINCH BUG NESTS NOW.

Chinch bugs already have made their appearance in certain parts of the United States.

One chinch bug destroyed now may prevent the production of hundreds to infest your wheat field later.

Chinch bugs pass the winter and early spring in wild grass and leaves, especially along hedges and fences and in the edges of woodlands adjoining cultivated fields.

Burn grasses, leaves, and other trash where the bugs may have found winter refuge. The bugs not burned will be killed by exposure to the weather.

Clean up all trash and rubbish which may harbor the insects in winter.

FRUIT TREE PESTS ARRIVE IN SHIPMENTS FROM FRANCE

Brown-Tail Moth Nests on Seedlings, and White Tree Pierid Are Discovered.

Laxity by French Inspectors, Feared by Federal Horticultural Board, Results in Sharp Warning to Importers—Tests Proceeding in Fumigation to Kill Larvae.

Discovery of heavy infestations of brown-tail moth nests on fruit seedlings, and of nests of the white-tree pierid on other shipments received from France have caused a general warning to be telegraphed to State officials by the Federal Horticultural Board, United States Department of Agriculture.

The board expresses a fear that there has been laxity on the part of the French inspectors, and urges careful and consistent examination of all shipments of fruit seedlings from France coming under State jurisdiction. The inspectors of the board at ports of first arrival make a superficial inspection of all foreign shipments of nursery stock to determine their agreement with the permit invoice and original certificate of inspection as to quality and kind of nursery stock, and as to compliance of the shipment with other regulations; but owing to lack of facilities and inspectors it is not possible to make the port inspection thorough enough to guarantee exclusion of plant pests.

Fumigation to Kill Larvae.

The French inspection service has been advised by cable of the condition of stock under their certificate arriving in this country, and a warning has been issued to French exporters and American importers. Experiments are under way in Boston to determine the possibility of killing hibernating brown-tail larvae by vacuum fumigation. In the meantime steps have been taken to have all French shipments given such fumigation as is now required for cotton. If vacuum fumigation will not kill all larvae contained in nests it may be necessary to cancel all existing permits for French

stock. The board strongly recommends the burning of all packing material.

The larvae of the white-tree pierid feed on a great variety of plants, and are reported as injuring the foliage of fruit and wild rosaceous and oak trees in Europe, and officials are anxious to keep the pest from getting a foothold in this country. Nests of the white-tree pierid are usually smaller than those of the brown-tail moth, and sometimes do not contain larvae.

Inasmuch as there is a possibility of confusing the nests of the brown-tail moth and the white-tree pierid, it is suggested that, if there is any doubt as to the insect killed, it should be forwarded to the Federal Horticultural Board for determination by specialists, after steps have been taken to kill any larvae which may be contained in the nests.

NEXT CONGRESS MAY ACT ON DEPARTMENT WAR MEMORIAL

With the incoming Congress, efforts will be resumed by United States Department of Agriculture workers for authorization to erect on the department grounds in Washington a memorial to the 67 former employees who lost their lives in the military or naval service during the war, it is announced by the Department War Memorial Committee, which now has in its treasury $7,657.25 toward the desired $10,000. At a recent meeting of the committee it was agreed to reinvest this money in Liberty Bonds maturing in 1923 or in Treasury certificates, to be held for future use.

A joint resolution authorizing the erection of the memorial was passed by the Senate, September 8, 1919, referred to the House Committee on Public Buildings and Grounds, and later to the House Committee on the Library. The present crowded condition of the House Calendar, it is said, will force the resolution over into the next season, when it is expected that early action will be taken.

DEPARTMENT-BRED SHEEP WIN PRIZES.

A yearling Southdown wether, bred and raised at the Bureau of Animal Industry Experimental Farm, Beltsville, Md., won the grand championship for wethers at the International Live Stock Exposition recently held in Chicago. In addition, Southdown lambs, likewise bred by the bureau, won second and fourth prizes in their respective classes. The sheep were entered for exhibition and competition by an Indiana breeder who had purchased them from the department.

DISEASE-RESISTING CANE A POSSIBILITY, SCIENTISTS SAY

Seedlings of the Sugar Plants Also Have Been Produced Successfully.

Department Greenhouses in Washington Report Important Developments in Tests for Seed—Thousands of Varieties Have Been Used in the Work.

Successful production of sugar cane seedlings in the plant-detention greenhouses of the Office of Foreign Seed and Plant Introduction at Washington, D. C., is announced by the United States Department of Agriculture.

Among the possibilities seen by department specialists in the present germination tests is the production of varieties that will resist sugar cane diseases, especially the newly introduced mosaic disease. A pathologist in the department has recently succeeded in perfecting a method whereby sugar cane plants can be infected with mosaic disease by artificial inoculation. This method will be used in testing the new varieties for immunity. In addition to the possible resistance to disease the seedlings will be studied from the standpoint of sirup and sugar production, with the hope that a cane better adapted to these uses than any of the present sorts will be found.

Raising of sugar cane from seed is almost unknown in this country; in fact, until 1888, it was not generally known that sugar cane produced viable seeds at all. In that year the director of a Government sugar cane station in Barbados grew a few seedlings from seed heads produced in the experiment station fields. Since then thousands of seedlings have been produced in the West Indies.

First Test Made.

The first successful experiment in propagation of cane from seed in this country was made by the Louisiana Experiment Station at Audubon Park, New Orleans, in 1905. The seed was brought from Hawaii where the growing season permits maturing of the seed heads. During the winter of 1919–20 several hundred seedlings were raised at Washington from seed which had been shipped from Java and Cuba. Since that time shipments of seed from various other tropical countries have been received and successfully germinated. The work is carried on in the plant-detention greenhouses at Washington, D. C., in order to guard against any possibility of infectious diseases or insect pests being introduced and distributed. The first of these canes are beginning to form nodes which can be used for planting if found disease-free.

Difficulty in obtaining sugar cane seed is illustrated by the experience of the department. Not only does the cane require a long, warm season to produce seed, which grows on a plume, like pampas grass, but only a very small number of the plumes carry fertile seed. A fluffy mass of several thousand possible seeds was recently taken to the plant-detention laboratories, and a young woman was set to work to sort out the good seeds by picking the mass over with a needle. Out of the first 5,000 seeds of this lot five plump seeds were found. These were placed in a germination box and one seedling was the result. In the case of some varieties of sugar cane a much larger proportion of the seeds will germinate if the seeds are mature and are properly cared for.

SUGAR SUPPLY PLENTIFUL, DEPARTMENT ESTIMATES SHOW

Beet-sugar production in 1920 exceeded the former record crop of 1915 by 27 per cent and reached the high figure of 2,219,200,000 pounds, according to a preliminary estimate by the Bureau of Crop Estimates, United States Department of Agriculture. The increased yield was the result of a combination of large acreage and favorable weather conditions. Production of cane sugar is estimated to have been 385,974,000 pounds, so that the total estimated sugar crop for the United States was 2,605,174,000 pounds. This was 15 per cent above the record sugar production for the United States in 1916, and 53 per cent above that of 1919. Beet sugar has been gaining on cane sugar in production for many years, taking the lead as early as 1906.

Sugar produced in the United States is said to be approximately one-fourth of the quantity consumed, and both the total and per capita consumption have steadily increased. The per capita was 71 pounds a year during 1901–1905, and 78 pounds during 1906–1910.

In 1913 and 1914, the two prewar years, the per capita consumption rose to 86 and 90.5 pounds, respectively. In the first year of the war, 1915, it dropped to 87.5 pounds, and in 1916 to 79.6 pounds. A rise to 83.5 pounds was noted in 1917, America's first year in the war. Despite the popular impression of a sugar scarcity in 1918, the rate that year was 78.7 pounds, followed in 1919 by 84.2 pounds.

Then came a period of extraordinary sugar consumption with 92 pounds in 1920, and the total arose to the enormous quantity of 9,750,000,000 pounds, or 1,000,000,000 pounds more than in the preceding year.

Farm Lease, With Safeguard, Provides for Share Rent Based on Crop Prices

An engineer doesn't have to see a boiler explosion to know what may happen if he ties his safety valve down. A glance at the variations in the market price of farm produce for the last year ought to warn the tenant farmer and his landlord as to what may happen to their business if they tie themselves down to a rigid farm-lease contract this spring. No one knows what abrupt changes may be in store for the produce market during the coming year, and in order to avoid serious friction and misunderstanding between landlord and tenant it is important to provide the lease contract with a clause that will adjust the rent to the market value of the produce grown on the farm. Before putting his name on the dotted line the farmer, and his landlord, too, should look over the stock of financial safety valves offered by the Office of Farm Management and Farm Economics, United States Department of Agriculture.

The Basis of Share Rent.

If the landlord is willing to accept the responsibility of marketing his share of the farm produce the lease may be drawn on the share rent basis. By its provisions the rent is paid in so many pounds of cotton, so many bushels of corn or wheat, or other produce, for each acre rented. In other words, the landlord receives his rent in a certain percentage of the crop and without relation to what the market price of the product may be. The rent is settled in terms of bushels and pounds rather than in dollars. Profits or losses from price fluctuations are shared under this system. If, however, the landlord can not accept his rent in produce, or if any other reason makes it advisable that the rent be paid in cash, the compensating device may be applied by means of a sliding-scale amendment. For example, a rent of $9 an acre might be rebated to $7 if the price of the main crop fell 20 cents a unit; or raised to $11 if the price went up 20 cents above the basic price agreed upon. If a very fine adjustment is sought a percentage system can be used in this scale so that the rent is changed by as many per cent as the price of the crop has risen or fallen between the date of the contract and the date of settlement.

Subject to Modifications.

Both systems are subject to many modifications which may be invoked to care for special cases. The strong feature in such lease contracts lies in the fact that both parties are protected from loss incurred by a change in prices which neither can foresee. A rigid contract which contains no allowance for market rise or fall does not offer protection to either individual; one will gather an excess profit at the other's expense if there is any abrupt change in the market price for the produce. By providing the contract with a relief clause the landlord and tenant unite to play the game together rather than against each other, as under the rigid type of contract.

In any sliding-scale amendment there should be specific understanding upon the following points:

The areas to be under the provisions of the scale. Areas not in crops and areas in soil-improvement crops may be kept on a nonscale basis, or, if cash rents have been written up on such land at high prices, the scale may be made to cover them all.

The products involved: It is better to take a single important crop as the standard than the average of two or more crops.

The grade and quality of the product upon which the change of price is to be determined.

The market: It is often advisable to name the dealer whose quoted price is to be used in making the adjustments.

The day or the period for which the quotation will be taken. Sometimes the average between the high and low price of a certain month is used.

But even after the flexibility of the farm-lease contract has been attended to there will still be need for an attitude of liberality in landlord-tenant relations. To help reduce costs, to secure opportune markets, and to adapt equipment and methods to new production demands, nothing is so effective as generous cooperation.

Farmers' Bulletin 1164 tells about the various standard forms of lease now in general use.

EARNED MONEY WITH COTTON IN ORCHARDS AND VINEYARDS

Cotton as an interplanted crop is finding much favor in the San Joaquin Valley of California. It seems to be especially well adapted for use in first-year vineyards or in young orchards. In Department Circular 164, issued by the United States Department of Agriculture, a representative of the Bureau of Plant Industry reports that a Kern County farmer planted cotton between young apricot trees which were making their third-year's growth. From about 2 acres of orchard land he harvested nearly $500 worth of cotton in 1918. The cotton plants occupied only 1.27 acres of the entire plat. In this instance the farmer was enabled to pay the upkeep costs of his orchard with the proceeds from his cotton and to pocket a good profit in addition.

Another farmer in the same county set out 12 acres of grapevines and interplanted with two rows of Pima (long-staple cotton) placed between each two rows of the vines. He obtained a yield of nearly a bale to an acre. At the end of the season his vines were in excellent condition, only one being lost in the entire lot. Specialists say the practice is a profitable one; the cotton is as good as when grown alone, and the young grapevines are equal in every way to those grown without an intercrop.

BAMBOO WILL BE DEVELOPED TO MEET INCREASING NEEDS

Possibilities of developing a bamboo-growing industry in this country to meet the increasing demand for fancy fish poles, barrel hoops, canes, phonograph needles, furniture, and many other uses are being worked out by the United States Department of Agriculture in the plant detention station in Washington and at branch stations in Georgia and Florida.

Bamboo shoots were brought to this country from China, Japan, India, and other countries by the department 10 or 12 years ago, and cultivation was started at Chico, Calif., and Brooksville, Fla. A mite was later discovered on the sheaths, however, which sapped the vitality of the plants, and it was at first thought that the industry would have to be given up. But on study it was found that the mites could be destroyed with hot water without injury to the plants. Propagation of clean plants was then begun at Bell, Md., with a view to establishing large clean groves in the gardens at Savannah, Ga.

Bamboo plants also suffer from a smut, which is carried in the rhizomes or root sprouts from which the plants are propagated. Smut may be carried through the tissues of the plant, and manifest itself in the new growth from which it is scattered by the wind, spreading the disease. Combating this disease is another of the obstacles which the department has overcome in developing what promises to be a profitable American industry.

Weekly News Letter

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POTATOES TAKING OLD RANK AS AMERICAN STAPLE FOOD

With the continuing drop in price, potatoes have receded from their temporary status as a delicacy, and are assuming their old rank as a great American staple food. This is to be assumed from figures lately compiled by the Bureau of Crop Estimates, United States Department of Agriculture, which show that between harvest time and January 1, this year, 285,172,000 bushels of tubers were moved off from the farms on their way to the table. This is 56,799,000 bushels more than left the farms in the corresponding period a year ago, or a half bushel additional for every man, woman, and child in the United States.

The potato crop of 1920 was the largest in the history of the country, amounting to 430,458,000 bushels, and of these only 345,286,000 bushels were estimated as remaining in the hands of growers and dealers January 1. In 1919 the crop was 355,773,000 bushels, and the amount in the hands of growers and dealers January 1, 1920, was estimated at 127,400,000 bushels.

When the potato crop has been large, under normal conditions, the stocks of January 1 usually have been large, and in years of usual production, before 1918, the stocks of January 1 commonly were about one-half of the crop in the total of the principal northern potato-producing States. In the case of the 1920 crop, on the contrary, the stocks on the farm, January 1, amounted to only one-third of the crop, and were smaller than the average of the three preceding years, when the production was much less.

Statisticians of the department believe the greater consumption of potatoes has been encouraged by the drop in prices. For the entire country the average price received by growers was $3.09 a bushel August 1; $1.85, September 1; $1.35, October 1; $1.18, November 1; $1.16, December 1; and $1.06, January 1.

MOTOR-TRUCK IMPACT CAUSES HEAVY DAMAGE TO ROADS

Repair bills for damaged roads would be much reduced, engineers in the Bureau of Public Roads report, after extensive experimental work, if motor trucks were designed to carry more of the loads put on them over the front axle and less over the rear wheels, as at present. In the average heavy truck of to-day the body is nearly balanced on the rear axle. When the truck strikes an obstacle or an irregularity in the highway, the damage done to the road surface by the rear wheels is much greater than it would be if the load were distributed on both axles.

Given a perfectly smooth road surface, traveled by a truck with perfectly smooth circular tires, there would be no impact, regardless of the speed or weight of load. Since such an ideal condition is practically impossible, road engineers recognize that all factors which increase or reduce the impact of a load are of the utmost importance in planning highway construction and regulation.

The placing of the larger part of the load on the rear axles is only one of several factors which lead to high impact forces. In general, the increased speed of the truck will increase the impact, hence the necessity for keeping the operating speed within reasonable limits. Roads kept as smooth as possible by careful maintenance will reduce the possibility of trucks exerting impact and pressure forces upon the highway surface. Cushion or pneumatic tires also reduce impact and cause less damage to the highways than those of hard rubber, especially if the latter are not kept in good repair.

DOES ANYONE WANT A BISON? UNCLE SAM GIVES THEM AWAY

The Forest Service of the United States Department of Agriculture has more than 20 male buffalo of varying size and age, which it desires to give away or loan to park or zoological associations, or responsible individuals who will take good care of them and use them for breeding or exhibition purposes.

The buffalo herd, established on the Wichita National Forest and Game Preserve, Oklahoma, some 15 years ago with a nucleus of 15 animals, has prospered mightily. It now numbers nearly 150 head, including the 28-year-old "gray gander" of the herd as well as the smallest and friskiest bull calf born last spring. As the herd has grown the number of bulls has increased more rapidly than the cows, until now there are too many of the former.

Under the regulations the Forest Service can give or lend only one male buffalo to an individual or institution. Several applications have already been received and approved, and plans are on foot to cut out from the herd the animals selected, and crate and haul them to the railroad.

Although Uncle Sam is willing to make a present of these animals, the recipient must pay all expenses incident to the gift, including the cost of crating, hauling, and freight charges from Cache, Okla., to the point of delivery.

Here is an excellent opportunity to get a real, live buffalo—not as gentle, perhaps, as a kitten, but, nevertheless, a nice pet if you have plenty of room to keep him, surrounded by a 12-foot double-ply, woven-wire fence, and the price of 2 tons of hay a year.

FEDERAL-AID ROAD BUILDING REACHES HIGH MARK IN 1920

Federal-aid highways constructed last year cost more than double the average amount spent annually for 10 years in building the Panama Canal. The cost of the work completed during the fiscal year of 1920, including the amount paid by the States, totaled approximately $80,000,000.

The construction of the canal is regarded the world over as a record-breaking achievement in respect to the dispatch with which it was carried out. The cost, however, was only $373,000,000, and a 10-year period was required to complete it, the average rate of expenditure being only $37,000,000 a year.

Comparing the magnitude of the Federal-aid program with the entire highway program of the United States, the significance of Federal aid is readily seen. Federal money allotted to projects actually under construction at the end of the fiscal year 1920, namely, $103,925,094, was only slightly less than the total expenditure of $106,861,053 from State funds for highway construction during the calendar year 1919. In spite of untoward economic conditions, the amount of Federal-aid business handled, as represented in 1920 by the number of projects, was approximately 25 per cent greater during the single year than all previous work done under the act since 1916.

Well-Matured Fowls Best for Breeding—Free Range Advised to Maintain Health

If cockerels or pullets are used in the breeding flock they should be well matured, poultry specialists in the United States Department of Agriculture advise. Hens are better than pullets. They lay larger eggs, which produce stronger chicks. Yearling and 2-year-old hens are better than older ones. Pullets used as breeders should be mated with a cock rather than with a cockerel. If a cockerel is used he should be mated with hens rather than with pullets. As a rule, well-matured cockerels will give better fertility than cocks.

Free Range for the Breeding Pen.

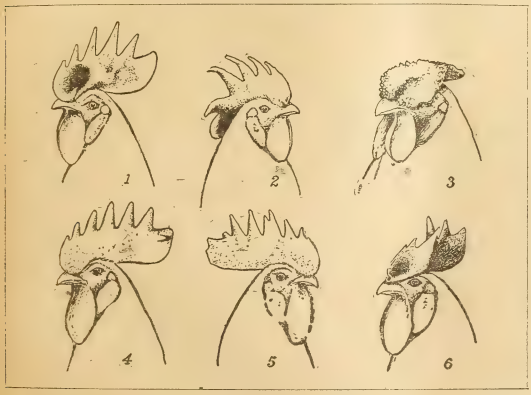
When possible, free range should be provided for the breeding stock. It is better to provide it during the entire fall and winter before the breeding season, but if this is not possible, free range just preceding and during the breeding season will be of great value. Birds on free range will get more exercise and, therefore, will be in better health and will give higher fertility, better hatches, and stronger chicks.

The breeding flock needs careful supervision to make sure that the fowls keep in good breeding condition. The birds and the houses should be examined often to see that they are not infested with lice or mites. Either of these pests in any numbers will seriously affect or totally destroy fertility. Care must be exercised also to see that the male does not frost his comb or wattles. If these are frosted his ability to fertilize eggs will be impaired and may not be recovered for several weeks. On very cold nights when there is danger of the combs being frosted the males to be used as breeders must be put in a warm place, such as a box or crate of suitable size, partly covered by a bag or cloth. The breeding male should be examined occasionally after feeding to see that his crop is full and that he is not growing thin. Some males will allow the hens to eat all the feed, with the result that they get out of condition. If this happens the male must be fed separately from the hens at least once a day.

Provide the breeding stock with comfortable quarters. The house must be draft proof, yet well ventilated and dry. The birds should not be crowded. If the birds are yarded, 4 square feet of floor space per bird should be allowed, but on free range from 3 to 3½ square feet per bird will be enough.

Feeding Breeding Stock.

The breeders must be fed so as to keep them in such condition that they will produce eggs. Any good laying ration is suitable for this purpose. Beef scrap should not run above 10 or 15 per cent of the total ration. The birds should be kept in good flesh but should not be allowed to become excessively fat. All whole or cracked grain should be fed in litter. This forces the fowls to exercise by scratching for it. As a supply of green feed is usually lacking late in the winter or early in the spring, sprouted oats, cabbage, mangels, or cut clover or alfalfa should be fed.



Heads of cockerels and cocks showing defective combs. Defects of these kinds should be guarded against in selecting breeders. 1, Thumb mark; 2, blade of comb following neck too closely and points showing tendency to lop; 3, rose comb showing hollow center; 4, side sprig; 5, uneven serrations and double point; 6, twisted comb.

GREEN-BUG INFESTATION ENDANGERS WHEAT IN TEXAS

Green bugs are reported by specialists of the United States Department of Agriculture to be extraordinarily abundant in the principal winter-wheat producing counties of Texas, especially in Denton, Wise, Montague, Cook, Collin, and Grayson Counties. The infestation also extends westward to other counties where winter wheat is grown. Severe injury to this crop in the infested regions now seems inevitable. Mild winter weather favors the multiplication of the green bug, and permits it to become so numerous that its parasitic enemies are unable to hold it in check. If the present mild weather should continue for the remainder of the winter and the spring should prove to be a cold, backward one, green-bug injury may extend northward through Oklahoma and Kansas and the Mississippi Basin, resulting in widespread and disastrous injury to winter wheat and oats.

No satisfactory remedy for the green bug has been discovered, but where small invasions are recorded the areas or spots affected should be plowed under promptly. This measure will not be effective, however, and is not recommended in the case of widespread invasions. The application of contact insecticides, such as kerosene-emulsion and tobacco extracts kills the pest, but the cost of such treatments renders them inadvisable and impracticable from the grower's point of view.

Department and State experts are watching the situation carefully that they may keep the wheat growers informed regarding the developments.

FUMIGATING COTTON.

Fumigation tests by the United States Department of Agriculture for the destruction of the pink bollworm in cotton showed that infested seed can be disinfected satisfactorily with carbon bisulphite, but that hydrocyanic acid gas at the ordinary atmospheric pressure has not sufficient penetrative powers to be effective to a greater depth than a few inches.

"Bread" and "White Bread" Are Now Defined Tentatively for the Trade

A tentative definition of "Bread," "Wheat Bread," and "White Bread" has been announced by the Joint Committee on Definitions and Standards of Foods, according to officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of the Federal Food and Drugs Act. Interested persons are invited to submit suggestions and criticisms of the tentative definition for the consideration of the committee when it meets for final action.

Meaning of Three Terms.

The text of the tentative definition as announced by the committee is as follows:

"*Bread, wheat bread,* and *white bread* are the clean, sound, sweet products obtained by baking in loaf form and at a temperature of 400° to 500° F. a dough consisting of a leavened and kneaded mixture of flour, potable water, edible fat or oil, sugar or other fermentable carbohydrate substance, salt, and yeast, with or without the addition of milk or a milk product. It contains, one hour or more after baking, not more than 38 per cent of moisture, nor more than 1 per cent of salt, and its acidity does not exceed the equivalent of 3 cubic centimeters of normal alkali for 100 grams of bread.

"In the United States the name 'bread,' unqualified, is understood to mean wheat bread or white bread. The dough of bread is also baked in the form of rolls and other units smaller than the loaf.

"*Milk bread* is wheat bread in the manufacture of which the water ingredient has been replaced by milk or its equivalent."

The committee announces also that future consideration will be given to the questions involved in the use in bread making of such additions as diastatic ferments, certain extracts or special preparations of grains, and salts used as yeast auxiliaries; also to those concerning minimum limitations for the proportions of protein and total ash. Suggestions for the proper designation of breads made, in whole or in part, with skim milk in place of water are desired by the committee.

The Joint Committee on Definitions and Standards is composed of three representatives from the United States Department of Agriculture, three from the Association of American Dairy Food and Drug Officials, and three from the Association of Official Agricultural Chemists. This committee recommends definitions and standards for foods to the respective associations and to the Department of Agriculture, which, when formally adopted are used to guide Federal and State officials in the enforcement of food laws.

Suggestions and criticisms may be addressed to the Secretary of the Joint Committee on Definitions and Standards, Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

BIRDS ASSIST MATERIALLY IN WAR ON INSECT PESTS

Special investigations to find how far the various bird species aid mankind in his perpetual war on insect enemies are being carried on by the Bureau of Biological Survey, United States Department of Agriculture. In the western States the grasshopper is particularly troublesome, so far as the farmer and the ranch owner are concerned. Specialists found that of 27 species of birds examined 25 were grasshopper eaters. In 19 of the species all of the individuals collected had given grasshoppers place on their menu. The birds having the best records were the lark sparrows, meadowlarks, Franklin gulls, Arkansas kingbird, crow blackbird, and the common kingbird.

Probably there are not birds enough in the country to clean up a full-strength invasion of grasshoppers such as the western farmers have come to dread, it is said, but the birds assist materially in the efforts made by man to control the pest.

Specialists say that poisoning campaigns are among the best weapons used against the grasshopper. From time to time reports are sent in, saying that many birds have fallen victim to the poisoned mixtures placed for the insects. Such charges were associated with the gypsy-moth spraying campaign in New England and with the laying of poisoned mashes for cutworms and other insects. Careful observation, made by experts, shows that the bird losses from such causes are insignificant. Some birds, it is said, are not harmed at all by the presence of poison placed for insects or vermin; the quail in California were not harmed by the baits that were set out to kill ground squirrels—though the campaign was a general one and was conducted with much intensity. In the Dakotas a few birds succumbed to the arsenic mashes placed for grasshoppers, but the number killed was so slight as to be of no consequence, it is said.

By killing stray cats and chasing off unscrupulous hunters the farmer can become a party to a sort of defensive alliance with his birds, so that when his crops need protection against insect enemies he will have a squadron of aerial cavalry to help him repulse the raid, specialists say.

Hawaii May Need Quarantine to Keep Out U. S. Insect Pests

To protect Hawaii against certain insect pests which are damaging crops in the United States, the Department of Agriculture announces the calling of a hearing to be held in Room 11, Federal Horticultural Board, April 15, at 10 o'clock a. m., to consider a quarantine against the carrying of sugar cane, corn, cotton, and alfalfa plants or parts thereof, and the fruits of avocado and papaya by passengers or in ships' stores from this country to the territory.

The Secretary of Agriculture has information of existing danger that injurious insects, including the sugar cane and corn-moth borer, the avocado weevil, the papaya fruit fly, the alfalfa weevil, and the cotton boll weevil occurring in the United States may be introduced into Hawaii through plants or parts of plants and fruits carried by passengers or as ships' stores.

The proposed quarantine would come under the Plant Quarantine Act of August 20, 1912, as amended. It is not intended to apply to commercial shipments, as necessary restrictions on such movement are provided for under Territorial authority. Any person interested in the proposed quarantine may appear at the hearing and be heard either in person or by attorney.

BLACK-WALNUT TREES AS MEMORIALS.

Planting of black-walnut trees as memorials to soldiers is recommended by the United States Department of Agriculture. It is pointed out that the black walnut played a valiant part in the World War. The wood was used for gunstocks and airplane propellers, and the nutshells contributed carbon for gas masks, while the kernels were used in many delicacies for the boys in the trenches. Demand for the wood for war purposes depleted the number of fine old trees, and this method is suggested for filling their places.

Sheep Suffer Severely from Parasites—Can Be Controlled by Proper Remedies

Sheep probably suffer more than any other kind of live stock from parasites. They are practically immune to tuberculosis, which is one of the serious ailments of cattle and swine, and among sheep there is nothing comparable to the devastating outbreaks of cholera among swine. Sheep have comparatively few bacterial diseases. Nevertheless, there is a steady loss of sheep in all parts of the country and this loss is mostly due to parasites. To inform sheep raisers how to combat these parasites and prevent their appearance in the flock, Farmers' Bulletin 1150, Parasites and Parasitic Diseases of Sheep, has just been published by the United States Department of Agriculture. It describes the most common of these diseases, giving the symptoms, treatment, and preventive measures.

Better to Prevent Disease.

It is the sheep owner's business to prevent disease rather than to attempt to cure it after it has made its appearance, says the bulletin. While there are special treatments for the various diseases which make it advisable to call a competent veterinarian, there are a number of ways to prevent diseases caused by parasites. Among these the bulletin suggests pasture rotation, use of forage crops, feeding from racks or board floors, draining or filling swamps, and preventing wandering dogs from getting into the flock. Permanent pastures perpetuate parasites, it is stated. The eggs of the internal parasites pass from the animals in the manure and thus the pastures become infested. The proper disposal of the manure will aid in preventing this.

Damage from parasites is greatest, as a rule, among lambs and young sheep. Hence, it is important to pay special attention to the care and handling of lambs and yearlings. Animals which are troubled with parasites usually do not have fever, but they are unthrifty and will lose rather than gain in weight. As a rule, also, there is some intestinal disturbance, shown by diarrhea or constipation. Unthriftiness may persist for long periods, and may have a fatal termination. Prompt action to ascertain the cause when sheep become unthrifty will often prevent serious loss.

Parasites of sheep are divided into two general groups, external and internal. Among the former, lice, sheep ticks, and scab mites are the most common. One application of sodium fluorid in the form of a powder rubbed into the skin will kill biting lice, but not sucking lice. Both kinds of lice, sheep ticks, and scab mites are destroyed by dipping the sheep. For lice and sheep ticks a number of dips are recommended in the bulletin, including coal tar creosote, cresol, and nicotin, or nicotin and sulphur. For scab mites the official dips are lime-sulphur and nicotin-sulphur dips. Arsenical dips are not well suited to sheep dipping. All places which have been occupied by lousy sheep should be regarded as dangerous from this standpoint for a period of three weeks; if occupied by ticky sheep, as dangerous for two months; if occupied by scabby sheep, as dangerous for a month or two in the case of pastures, and a year or more in the case of buildings. Quarantine measures are essential in eradicating scab.

Most Common Parasites.

The most common internal parasites of sheep include tapeworms, flukes, roundworms, and a few other forms such as the maggots causing grub in the head, the tongue-worm and the one-celled Protozoa. One of the most common of these is the grub, infestation with which can be largely prevented by smearing the nose of the sheep with a preparation made of equal parts of tar and grease, or tar and fish oil. Other important internal parasites discussed in the bulletin are tapeworms, the gid parasite, hydatid, liver flukes, stomach worms, nodular worms, hookworms, and lungworms. Of these, certain tapeworms are fairly common over the entire United States; one tapeworm occurs only in the West; gid is most prevalent in Montana; liver flukes are most common in the Gulf States and the Pacific Coast States; stomach worms and lungworms take a heavy toll in sheep in almost every State in the Union; and nodular worms and hookworms are common in the South and East.

Copies of the bulletin can be obtained free by writing to the United States Department of Agriculture, Washington, D. C.

CHEATED LIVE STOCK BECOMES RUNTY.

Niggardly methods of feeding and caring for farm live stock are unprofitable. This is one conclusion resulting from an inquiry conducted by the United States Department of Agriculture into the causes and prevention of runtiness among farm animals. Seventy-five per cent of undersized and undeveloped animals, according to a summary of more than 700 opinions advanced by live-stock owners, are due to inferior breeding, inadequate or unsuitable feed, and pests, such as parasites and insects.

The remedy is the better care of better stock, and the cost of this remedy, in the opinion of practical farmers, is much cheaper than the expense of continuing to raise undersized and slow-maturing domestic animals. "Better raise one good cow than two poor ones—a runt is nothing but expense all its life." This opinion, which is typical of many others, is from a Michigan dairyman. A thrifty New Englander sums up sentiment on this topic with the remark, "I find I can not cheat the animal without cheating myself."

Shows Poison Gas Impracticable for War on Cotton Boll Weevil

J. L. Webb, acting in charge of Southern Field Crop Insect Investigations, Bureau of Entomology, United States Department of Agriculture, has officially denied the statement made in a recent news article which has been given wide circulation over the United States that the Chemical Warfare Service of the Army, in cooperation with the Department of Agriculture, is preparing to exterminate the boll weevil in the cotton belt by the use of poison gas.

"There is no foundation for the report," he said; "no plans have been made or are in contemplation by the Department of Agriculture for the use of poison gas against the boll weevil.

Would Imperil Human Life.

"Several times since the signing of the armistice the theory has been put forward that the poison gases developed by the Army could be advantageously employed in combating the boll weevil. It is safe to say that no one who understands all the factors and conditions involved has ever considered the plan feasible. A little thought devoted to the subject will make clear the fact that the release in cotton fields of the South of volumes of deadly poison gas would be to menace the life of every human being and animal within its reach. Furthermore, its effect upon the boll weevil would be problematical.

"Observations made by experts of this bureau indicate that a heavier dosage of gas would be necessary to kill boll weevils than would be necessary to kill human beings. Insects are sometimes quite tenacious of life and are able to

withstand conditions which would absolutely be fatal to human life.

"This bureau has developed a plan of boll weevil control which is safe and effective. The plan involves the use of arsenate of lime (a poison), which is dusted upon the cotton plants by means of machinery manufactured for the purpose. Eradication of the weevil is impossible. It is possible, however, by means of this poison to keep down the number of weevils to such an extent that a good crop of cotton can be raised. It should be pointed out, however, that the only purpose served by the use of this poison is its effect upon the weevil. It will not insure a good crop of cotton if conditions are such that a good crop could not be raised if the weevil were not present."

SHOWS LUMBER-CUT INCREASE IN NORTH PACIFIC STATES

Oregon and Washington mills cut 10 per cent more lumber in 1920 than in 1919, according to the indications from incomplete returns made to the Forest Service, United States Department of Agriculture. This estimate is based upon a comparison of the cut of 121 identical big mills, representing about 40 per cent of the cut of the two States.

This is the first preliminary statement issued in connection with the census of lumber, lath, and shingle production now being carried on by the Forest Service in cooperation with the National Lumber Manufacturers' Association. A summary of the mill reports received follows:

Identical Class 4 Mills.

(Cutting 5,000 to 9,999 M. per annum.)

State.	Mills.	Year.	Feet.
Oregon	8	1919	46,288,000
Do	8	1920	53,126,000
Washington	18	1919	139,025,000
Do	18	1920	123,846,000

Identical Class 5 Mills.

(Cutting 10,000 M. or over per annum.)

Oregon	31	1919	971,770,000
Do	31	1920	1,092,213,000
Washington	64	1919	1,685,532,000
Do	64	1920	1,630,328,000

WAR TO THE LAST RAT HOLE UNDER FEDERAL AGENTS' AID

According to reports to the United States Department of Agriculture, rat extermination work throughout the country is being carried forward vigorously under the combined efforts of the county agricultural demonstrators sent out by the States Relations Service and the rodent control experts representing the Bureau of Biological Survey.

At Blackstone, Va., the home demonstration agent and the Biological Survey representative joined in a rat campaign which promised to send 12,000 rodents into the rat hereafter. When the final count of rat tails was taken it was found that 30,000 of the pests had been killed in the one town.

At Fargo, N. Dak., the citizens were annoyed by a heavy infestation of rats. A bureau representative enlisted the cooperation of the city commission, the commercial club, the health department, the Boy Scouts, women's clubs, and other organizations, and conducted a very successful campaign against the pest. In this instance the poison, barium carbonate, was purchased in quantities and used as a destructive agent with excellent results.

A State-wide rat eradication campaign in Texas will soon be launched against rats. The Bureau of Biological Survey has been asked to detail a specialist to direct the operation.

FIRE TRAP IN THE OLYMPIC FOREST CREATED BY CYCLONE

(Continued from page 1.)

season ever encountered by the Forest Service, when over 4,000,000 acres of National Forest land were burned over in the West, and 6,500,000,000 board feet of timber, valued at nearly $15,000,000, was lost."

An Air Survey Planned.

To meet this emergency situation, Secretary of Agriculture Meredith has requested the Secretary of the Navy to detail hydroplanes for an air survey of the storm-swept region in order that the amount of damage may be determined, since it is impossible to traverse the uprooted forests on the ground. A request has also been made to the Secretary of War that the railroad constructed by the Spruce Production Corporation, extending from Port Angeles to Lake Pleasant, on the Olympic Peninsula, be equipped with rolling stock and operated at its maximum capacity. This railroad is the one important line of communication into the devastated area, and will afford a means of salvaging a considerable amount of the down timber.

The Secretary of Agriculture has transmitted to the Secretary of the Treasury an estimate to be submitted to Congress for an emergency appropriation of $100,000 to enable the department to employ patrolmen to guard the storm area against fire, to repair and construct roads, trails, telephone lines, and other means of communication, and to salvage Government timber.

Gov. Louis F. Hart, of Washington, it is reported, will also ask the State legislature for an emergency appropriation of $100,000 to open up the country and cooperate with private owners and the Federal Government in intensive fire protection.

DEPARTMENT'S NEW ALMANAC GUIDE TO YEAR'S FARM WORK

"Beware of false prophets. Don't plant by the moon; but get the best seed and prepare the seed bed, then plant when soil and moisture conditions are right." "Keeping farm accounts never worried Adam; but he was only a gardener." "The owner of a scrub bull should have a leather medal—made from the bull's hide." These bits of farm advice are contained in "An Agricultural Almanac for 1921," issued by the United States Department of Agriculture to remind farmers to do the right thing at the right time and to tell them where to secure information on agricultural subjects.

The almanac, which appears as Farmers' Bulletin 1202, is published, the department says, in response to a large demand from farmers for a calendar of work showing the timely use of new farm facts. Seasonal advice and suggestions are given on such topics as the weather, farm plans, fruit, live stock, poultry, farm operations, marketing, wild life, and woods work. References to other publications of the department tell where detailed information on each subject can be had.

A section on "Farm Helps" discusses farm laws and gives tables and directions for such things as mixing stock feed, fertilizers, and spray solutions; weights of seed and grain and other information needed by farmers and their families. A limited number of copies is available for distribution by the United States Department of Agriculture and may be had upon application.

CIVIL SERVICE EXAMINATION.

The United States Civil Service Commission announces an open competitive examination on March 15, 1921, for associate agricultural economist, to fill a vacancy in the Office of Farm Management, Department of Agriculture, for duty in Washington, D. C., at $3,600 a year. For full particulars apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.

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ECONOMY NEEDED TO BUILD UP FERTILIZER INDUSTRY IN 1921

Secretary Meredith Tells the Senate Lack of Funds Prevents Full Investigation.

Price Concessions by Manufacturers Are Needed to Stimulate Buying and Restore Farmers' Confidence—A Phosphate Monopoly Creates Dangerous Situation.

Unsettled conditions in the farm-fertilizer market are indicated in a statement forwarded to the United States Senate by the Secretary of Agriculture in response to a resolution asking for information on certain points. The report shows that according to best estimates the total amount of potash imported and produced in the United States for fertilizer purposes in 1920 was 240,000 tons, as against 237,437 tons in 1913, and predicts that because of present subnormal buying power large stocks of potash salts will be carried over beyond the spring season of 1921.

No Funds for Investigation.

As to nitrogen, the department is without specific information, due to lack of funds for gathering data, but figures of the Bureau of Foreign and Domestic Commerce show imports in 1920 of 1,480,503 short tons of nitrate of soda and a relatively small amount of nitrate of potash, as against 659,600 short tons of nitrate of soda in 1913. In view of the subnormal buying power for the spring season of 1921, the stocks on hand are believed sufficient for deliveries and contracts for the entire year. The imports are continuing. Sulphate of ammonia production is estimated at 400,000 tons. It is estimated that 50,000 tons are now in the hands of producers, and about an equal amount in the hands of fertilizer manufacturers. No definite estimate can be made of the amount in storage or of resale material.

The stocks of cottonseed meal and other organic ammoniates are believed to be larger than usual.

Statistics of the actual production of acid phosphates in 1920 are not available because of the same lack of funds for gathering data; but a calculation based on the consumption of phosphate rock places the figure at 4,500,000 tons of acid phosphate, as against 4,000,000 tons in 1913. Under usual conditions this would have been considered a normal supply of acid phosphate, the report states, and the industry could readily have absorbed it. With the subnormal buying power, however, that developed in the fall of 1920 and the anticipated smaller sales of commercial fertilizers in the spring of 1921, large stocks have accumulated in the last two months, and some of the acid plants have actually closed because their storage capacity has been reached.

FILMS FOR SOUTH AMERICANS.

Motion-picture work of the United States Department of Agriculture, which is claimed to be of great value in demonstration work in this country, is being extended to South America. A new film showing the advantages of American swine has just been prepared with Spanish legends and shipped for use by the department's foreign market representative in the southern republics. It gives views of the American swine industry, the hog-cholera prevention work, and scenes at the department's live-stock experiment farm at Beltsville, Md., as well as work in the Chicago stockyards.

The report states that prices fluctuated greatly in 1920. The price of Florida pebble phosphate rock, for instance, varied from $6.85 f. o. b. Tampa, in February, to $11 f. o. b. mines, in the summer and fall, and back to $9 and $9.50 in January, 1921. The quotation at the mines involves an additional cost of about $1.50 for transportation to an ocean port. Bulk acid phosphate varied from $19.75 in New York in January, 1920, to $21 in the fall, and dropped to $15 in January, 1921. Farmers' straight acid phosphate in bags was quoted at $24 a ton at Northern ports in January, 1920; $30 in the summer and fall, and dropped to $25 to $29 beginning with October. In 1913 pebble phosphate rock sold from $3 to $3.70 a ton at Tampa; bulk acid phosphate was from $7.20 to $8 a ton in New York; and farmers' straight

(*Continued on page 8.*)

MEADE COTTON MAY BE USED INSTEAD OF DYING SEA-ISLAND

Variety Developed by United States Department of Agriculture a Suitable Substitute.

Spinning Tests of the Two Products Show Only Slight Difference in Fiber Strength—Boll Weevil's Ravages May Destroy Sea-Island Variety.

Comparative spinning tests of Meade and Sea-Island cottons conducted by the United States Department of Agriculture show slight difference in strength of the fibers, the Sea-Island being superior by a small margin.

The tests were intended to demonstrate to growers and manufacturers the suitability of Meade as a substitute for Sea Island, the growing of which has become extremely hazardous because of the boll weevil. Meade cotton, a variety developed by the United States Department of Agriculture, is rapidly taking its place. A comparison of the two varieties, with special reference to their spinning qualities, is contained in Department Bulletin 946, recently published.

To Beat the Boll Weevil.

The ravages of the boll weevil have been so severe, according to the bulletin, that the Sea-Island variety may be wiped out within the next few years. Its annual production has been reduced from 92,619 bales in 1917 to 6,916 bales in 1919. The Meade cotton, developed during 1912 and subsequent years, has now been established on a commercial basis and its future production in place of Sea-Island is believed to be assured.

Meade cotton is a long-staple, upland variety, producing, under favorable conditions, a fiber 1⅛ inches long, of fine texture like the sea-island. Because its seeds are nearly smooth, it should be handled on roller gins. The fiber resembles Sea Island so closely that the two can not be distinguished except by experts; and it is said that Meade has been sold on the regular Sea-Island market at Savannah at a premium over the

mainland Sea-Island. The Meade variety matures two or three weeks earlier, gives a greater production of both lint and seed, and is more easily picked than Sea-Island.

In the comparative spinning tests the cotton of the two varieties was run under as nearly identical conditions as possible. Averaging the waste for the three seasons in which the tests were made, it was found that the Meade cotton was 3.5 per cent more wasty than the Sea-Island. Comparing the breaking strength of the yarns for the three seasons, a difference of 17.2 pounds was found in favor of the Sea-Island for the 23's yarn, and 1.68 pounds for the 100's yarn.

Copies of this bulletin, entitled Comparative Spinning Tests of Meade and Sea-Island Cotton, may be had free on application to the United States Department of Agriculture, Washington, D. C.

Extra Meals for Dairy Cows Gave Owners a Fine Return

Returns of $87.15 for $33.93 spent for extra feed is the record made by some of the members of the Wahklakum, Wash., cow-testing association, according to the third annual report of the tester made to the western office of the Dairy Division, United States Department of Agriculture. In the association there were 249 cows, which gave an average production per cow of 336.5 pounds of fat. The herd which made the highest record in the association contained 14 cows and averaged 454.4 pounds of fat.

A comparison of six herds, in which testing was used as a basis for feeding, breeding, and management, and in which grain was fed consistently, with six herds where poor feeding and care were practiced, is a striking example of the returns good dairy methods will bring. In the report of the tester this information is given in the following table:

	Number of cows.	Pounds milk.	Pounds fat.	Gross return.	Feed cost.	Net returns.
First 6 herds..	82	7,420	388.00	$238.30	$97.10	$139.16
Second 6 herds..	99	5,311	246.40	149.15	63.17	85.98
Difference....	.....	2,109	141.60	87.15	33.93	53.18

ARKANSAS MEAT-CANNING WORK WAS A COMPLETE SUCCESS

Six more home-demonstration agents in Arkansas have learned how to cut up and can a beef carcass and will teach the people in their respective territories. Recently they attended a demonstration school in meat canning conducted by a canning specialist from the United States Department of Agriculture at Lake Village, Ark.

The demonstration was given at a local hospital. Besides the six agents, there were approximately 50 people of the community in attendance, including many nurses and doctors. The head doctor contributed a beef animal, which was slaughtered for the demonstration. After the meat was cut up the pieces were boiled or roasted. The bones and meat scraps were used for making soup stock and beef stew.

The carcass of the beef, not including the head, feet, or the intestines, weighed 137½ pounds. After the bones had been utilized for soup stock, they weighed 35 pounds, which left 135 pounds of meat for canning. From this amount 52 No. 2 cans of roast beef, 8 of steak, 28 of boiled meat with soup stock thick enough to jelly, 11 of beef hash, and 10 of very concentrated meat stock were canned.

Alive the animal would not have brought more than $10 in the local market. The canned meat was estimated to be worth at least $45. The heart, liver, feet, and head paid for the cost of butchering. The value of the hide was extra profit.

Combating Diseases of Southern Pecans—Choice of Grove Site Important Factor

Though there are some diseases of southern pecans the causes of which are unknown, by far the most serious ones have been studied and reliable control measures worked out. Descriptions of these are contained in Farmers' Bulletin 1129, Diseases of Southern Pecans, just published by the United States Department of Agriculture. The information contained in the bulletin applies to commercial orchards in the southern and southeastern Coastal Plain of the United States.

Can Be Controlled.

Scab, the most serious fungous disease, can be controlled by spraying with Bordeaux mixture, according to the bulletin; and rosette, the worst disease due to environment, will not cause serious injury if the fertility of the soil is built up so that the trees are in a thrifty condition.

Scab attacks the leaves, twigs, and nuts. The small, velvety, black spots on leaves are seldom sufficiently numerous to do serious damage, but the appearance of the disease on the twigs will cause them to die. The greatest damage is caused by the fungus attacking the nuts, which results in their dropping from the tree before maturity. Late summer infection results in undersized, faulty nuts.

Although scab is found throughout the southern pecan belt, serious damage is confined to a limited number of varieties grown in the warmer and more humid sections. Inland from the Gulf and Atlantic coasts it becomes less serious, and at a distance of 150 miles is of relatively minor importance. The use of resistant varieties is strongly recommended in all orchards within 150 miles of the Gulf and Atlantic coasts. Such varieties are Stewart, Frotscher, Money Maker, Teche, Russell, and Success. As a protective measure, spraying with Bordeaux mixture (4 pounds bluestone, 4 pounds quick lime, 1 pound of resin fish-oil soap, and 50 gallons of water) is recommended. Spraying with Bordeaux mixture also controls nursery blight, which appears on the leaves, particularly in nurseries, and brown leaf spot.

Rosette is a disease of the tree, and thus far has proved to be the most serious with which the pecan industry has to contend. In its earliest stages rosette is indicated by a few small, wrinkled, yellow-mottled leaves at the end of the branches. Seriously affected trees rarely bear nuts and make but little growth. The disease occurs among trees found on soils lacking in plant food, in humus, and in moisture-holding capacity. Pecans should not be planted on such soil. If rosette appears in a grove, the soil should be built up by the use of stable manure or leguminous cover crops. The disease is sometimes caused by bad subsoil, such as piney-woods hardpan. This formation can be readily broken up by small charges of explosives. Growers who have tried this plan report a quick recovery of diseased trees.

Winter Injury.

Winter injury sometimes causes serious damage among young trees. As a result of it the lower part of the trunk for about a foot above ground is killed. Remedies consist of avoiding both cultivation and fertilization after midsummer, and of sowing cover crops in July or August, which checks the growth of the trees and reduces their susceptibility to cold. Some growers protect their young trees by wrapping the trunks with old sacks and other such material.

Several other diseases of local or minor importance are discussed in the bulletin.

New Date, Highly Productive, Found by Scientists After 20 Years' Search

One of the romances which mark the history of the United States Department of Agriculture's plant-exploration work has resulted in bringing to this country 2,800 date-palm offshoots of the choicest varieties of the Nile Valley and Libyan Desert.

These offshoots, mainly from the Saidy, or Wahi, and the Sewi varieties, were shipped from Alexandria to New York by Prof. S. C. Mason, arboriculturist of the Bureau of Plant Industry, who first discovered their sources in 1913, and are now at the bureau's date garden at Indio, southern California. This is the headquarters for the date work in the Salton Basin, comprising the Coachella Valley north of the Salton Sea and the Imperial Valley on the south, the one region in the United States combining the climatic features necessary to the successful cultivation of the choicest Old World varieties of dates.

Search Lasted 20 Years.

For nearly 20 years the Department of Agriculture has been seeking offshoots of a large date known to commerce as the Wahi. These were regarded as the choicest dates obtained in Egypt, ranking next to the famous Deglet Noor of Algeria and Tunis, and with this difference—that while the Deglet Noor produces few offshoots from which young trees can be grown, the Wahi is prolific in this respect, producing from 20 to 30 offshoots in the lifetime of a tree. However, all efforts to find the source from which the Wahi came failed year after year.

When Prof. Mason went to Dakhla in 1913, the first representative of the United States Department of Agriculture to visit that historic "inner oasis," he arrived in the time of the date harvest. When asked about the dates they were sending out in large quantities, for Dakhla has nearly 200,000 date palms, his desert host replied: "This is the one commodity we have for export in all five of these oases. This date packs so well that we can send it on the long journey to the valley." Prof. Mason asked the name.

"We desert people call it the Saidy," said the sheik, "but when these Bedouin traders get over to the valley with it they call it the Wahi."

To this friendly sheik was due the discovery of the true name of this valuable variety of date, and the whereabouts of a quarter of a million trees in their home in the fastnesses of the Libyan Desert.

Previous Sources Scanty.

Prof. Mason was able to obtain only 108 Saidy offshoots on his expedition in 1913. These, with a very few obtained from an unknown origin a few years previously, were the only sources for the introduction of the variety in the United States up to the time of the recent visit.

Prof. Mason sailed from New York in March, 1920, and landed at Alexandria in April. With an expert Egyptian gardener from the Horticultural Experiment Station at Giza contracts were made in the best localities for 1,000 offshoots of the Sewi date from upper Giza, to be delivered at the horticultural packing sheds. Another contract was made with a reliable Arab sheik whose friendship had been won on the former journey, at Kharga Oasis, for 1,000 offshoots of the Saidy variety to be placed on the cars of the narrow-gauge branch railway running from the Nile over the plateau to that oasis.

MICE AND CHIPMUNKS GIVE AID IN RESTORING THE FORESTS

Mice and chipmunks are helping to reestablish the forests of Oregon and Washington, according to officials of the Forest Service, United States Department of Agriculture. Studies made by J. V. Hofmann, director of the Wind River Forest Experiment Station at Stabler, Wash., have shown that a large part of the young fir growth coming in on burned or logged areas in these States is not wholly due to seeding by occasional trees which are left, but in part to seed buried by small rodents beneath the duff of the forest floor.

In the West mice and other rodents are usually condemned as workers of evil in the forest. They often do considerable damage to food supplies, and their appetite for pine and fir seed is chiefly responsible for the abandonment of attempts to reforest burned-over and waste areas by direct seeding methods. Sometimes, however, the work of these little animals is beneficial.

"In the Douglas fir region," says Mr. Hofmann, "the forests produce a heavy seed crop every two or three years. Rodents collect the seed from the cones in large quantities and bury them just beneath the surface of the soil. Part of the seed thus stored away is eaten, but snow and soil movement often cover many of the hoards so that they are never found. When logging operations open up the stand, those seed germinate and produce a new stand of little trees."

The Wind River Experiment Station is but one of several similar establishments maintained by the Government in the National Forests for solving forestry problems. In this particular case many thousands of dollars have been saved annually to western lumbermen through the assistance of rodents in restocking cut-over lands. This is one example of the value of the experiments being carried on by these stations, which are so important to the perpetuation of our forests and dependent industries.

In the Pacific Northwest $50,000 annually is needed for this work, and only through adequate funds can much needed results be recorded.

TO TEACH BOYS AND GIRLS FIRE-PREVENTION METHODS

Keen interest in the movement by the Fire Marshals' Association of North America to secure legislation making the teaching of fire-prevention methods to school boys and girls compulsory is being displayed by officers of the Forest Service, United States Department of Agriculture, especially in the Western States, where large areas of national forests are located. This knowledge is expected to make the task of protecting the forests easier.

The whole question of adequate timber supply for the future needs of the American people, the Chief Forester points out, hinges on the protection of our forests. "Millions of acres of tree growth," he declares in urging the need for a law of this kind, "are destroyed each year by fires, and as a result of these repeated burnings we have in the United States to-day 245,000,000 acres of cut-over lands that are only partially restocking and more than 80,000,000 acres that are wholly nonproductive. A great majority of the forest fires are man-caused, and therefore preventable. These are things which every child should know, for it is on them that the heaviest part of the future burden of curtailed timber resources will fall."

New Jersey is the only State that has passed laws making the teaching of fire prevention in all schools compulsory, but it is expected that many of the State legislatures in session this winter will follow the example.

Weekly News Letter

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John L. Cobbs, Jr., Chief

PRESS SERVICE
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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

EXTENSION DIRECTORS HOLD CONFERENCE IN WASHINGTON

In response to an invitation of the United States Department of Agriculture, the directors of extension of 28 States met in Washington February 1, 2, and 3. The purpose of the conference was to give the directors an opportunity to get in closer touch with the work of the department and to establish those contacts and relationships which will be most helpful to them in their extension activities. Addresses were delivered by Secretary Meredith, Assistant Secretary Ball, chiefs of bureaus, and other officials of the department, and systematic trips were made through the various bureaus of the department. The directors gave particular attention to the work in marketing and farm management, and expressed a desire for more information from the department to aid them in the solution of the many problems of marketing and of adjustment of farm business to the present market and financial situation arising in their extension work.

BLUESTONE-LIME TREATMENT REDUCES WHEAT SMUT LOSSES

Losses caused by stinking smut in California were reduced to about 2 per cent on a wheat crop of 9,840,000 bushels in 1920 by treating seed by the bluestone-lime method. The State College of Agriculture estimates that stinking smut has caused losses ranging from 400,000 to 500,000 bushels annually. In 1918 the loss was estimated at 5.8 per cent of the total crop.

County agents in 1918 began advising and demonstrating the bluestone-lime treatment for the control of this smut as recommended by the United States Department of Agriculture. These treatments brought such encouraging results that seed treatment has since become quite general. In 1920 losses were reduced to about 200,000 bushels. It is conservatively estimated, on the basis of $1.50 per bushel for wheat, that demonstrations on wheat-smut control given by the county agents in California resulted in a saving of $200,000 for the farmers of that State last year.

FEDERAL HELP IS GIVEN ON PROBLEM OF MARKETING

Nearly 200 demonstrations of approved practices of preparing farm products for market were made and more than 700 lectures on the packing, grading, handling, storage, and sale of such products were given in the last fiscal year by specialists of the Bureau of Markets, United States Department of Agriculture.

Instructions as to the most successful practices for marketing sweet potatoes were given to producers and shippers in most of the Southern States and in one of the far Western States. In one State alone plans and specifications for sweet-potato storage houses were furnished, leading to the erection of 53 such buildings.

In a number of States the field agents, through State agencies, were instrumental in bringing about the adoption of Federal standards for farm products and containers. In all States assistance was given to the county agricultural agents in solving difficult local marketing problems.

POTATO WART NOT PRESENT IN COMMERCIAL GROWING AREAS

Potato wart, a serious European disease found in this country in 1918, is now known to occur in 10 small mining villages centering around Hazleton in the anthracite section of eastern Pennsylvania, in 11 mining villages in the bituminous region of central and western Pennsylvania, in 1 mining town and 1 sawmill hamlet in eastern West Virginia, and in 3 small towns in western Maryland. Three surveys for the disease have been made; one in the vicinity of its discovery immediately following the finding of the first infected garden at Highland, Pa., in 1918, a very extensive survey of the entire country in 1919, and another more restricted and intensive survey of the eastern half of the country, particularly in the mining sections of Pennsylvania, West Virginia, western Maryland, and eastern Ohio, in 1920.

The results of these surveys indicate the freedom of the country as a whole from any extensive areas of wart infestation. With one exception, the infested areas are entirely gardens cultivated mainly by coal miners of foreign birth. No commercial potato-growing areas are included and it is fairly certain that the disease does not occur in our principal potato-growing districts.

To protect potato growers against the possible escape of this serious disease and its introduction into other sections, State quarantine laws have been put into effect which control, supervise, and regulate the planting, growing, digging, storing, and marketing of potatoes grown in the infested areas, and also the movement and shipment of potatoes, manure, or other material capable of carrying the disease to other sections.

Active investigational work on the potato wart has been under way since its discovery in this country, with the result that 27 American varieties of potatoes, including some of the best commercial sorts, are now known to be immune to the disease. Experiments on the eradication of the disease by soil sterilization are also being made, and survey work will be continued until it is thought that all points where wart is present have been found.

QUARANTINE IS ANNOUNCED AGAINST CITRUS BLACK FLY

A quarantine to protect the citrus industry of the United States by preventing the introduction of the citrus black fly, an injurious insect pest, has been announced by the Federal Horticultural Board of the United States Department of Agriculture. The order, signed by Secretary Meredith, becomes effective April 1, and provides regulations for the entry into this country of fruits and vegetables from Cuba, the Bahamas, Jamaica, the Canal Zone, Costa Rica, India, Philippine Islands, Ceylon, and Java. The quarantine applies to the products in their raw or unprocessed state, and to plants or parts of them used as packing material. The rules cover the movement of any railway car, boat, or other vehicle from these countries upon its first arrival at a United States port.

Clean fruits and vegetables, other than those subject to special quarantines, may be imported from these countries upon compliance with the regulations. No restriction is placed on entry of processed fruits and vegetables. Action was taken following a hearing at which many persons interested in the quarantine were present.

"BETTER SIRES—BETTER STOCK" GOES AHEAD

DOG PUREBRED, TOO.

Of 95 head of livestock on an Ohio farm, 90 are purebred, according to the owner, who is cooperating with the United States Department of Agriculture in the better-sires movement. His statement of the pure breeding is verified by two other live-stock owners.

A registered Aberdeen-Angus bull and a registered Duroc-Jersey boar are kept. One grade Angus cow and four crossbred mares are the only stock not purebred. The poultry are entirely Barred Plymouth Rocks of pure breeding. The farm dog, a beagle, is also purebred.

SELLS NO PUREBREDS BELOW A STANDARD OF EXCELLENCE

So strongly has the purpose of the better-sires campaign, now being conducted by the United States Department of Agriculture, appealed to some breeders that they are not content with purebreds only, but every animal they buy or sell in addition to being a purebred must pass a standard of excellence. The methods of one breeder in Upshur County, W. Va., according to a report received by the department, illustrate this tendency. This breeder has a fine herd of Angus cattle. All calves which fall below the standard of excellence that he has set are not registered, but are either castrated or sold on the open market as common cattle.

GOVERNMENT AIDS MOVEMENTS IN INTEREST OF BETTER SIRES

In response to many requests for information to be used in starting better-sires movements in various localities, the Bureau of Animal Industry, United States Department of Agriculture, has prepared a list of available publications and other material in the department. It has also furnished data useful to persons interested in legislation for restricting the use of mongrel sires.

Except when the open range is involved, however, or there is need to control inferior sires from running at large, specialists of the bureau prefer a continuance of educational work to legislation. They place emphasis on the fact that the work, although involving certain records and blanks, is strictly educational. To aid in conducting educational campaigns, the department has issued a number of circulars, posters, and newspaper articles, as well as much mimeographed material. A booklet entitled "Better Sires—Better Stock," explaining the movement, can be obtained free by addressing the United States Department of Agriculture, Washington, D. C. Other material on this subject is:

Yearbook Separate 816, Harnessing Heredity to Improve the Nation's Live Stock.

Department Bulletin 905, Principles of Live-Stock Breeding (semiscientific). Price, 15 cents.

Farmers' Bulletin 1167, Essentials of Animal Breeding.

Enrollment Blank for Better Sires—Better Stock Crusade (on which live-stock owners agree to use good purebred sires).

Specific Facts and Figures on Benefits Following Use of Better Sires.

County Live-Stock Survey Blank.

Poster, Which Way Is Your Live Stock Going?

Poster, Purebred Sires and Herd Improvement.

Several sets of 72 lantern slides each have also been prepared by the department and a motion picture is now in the making.

PUREBRED ASSOCIATIONS PLAN TO EXHIBIT STOCK

Two pure-bred live-stock associations were organized last year in Steuben County, Ind., according to a report received from County Agent T. A. Parker by the United States Department of Agriculture. The associations plan to make exhibits at the county fair to stimulate interest in well-bred animals, and then conduct cooperative public sales. One association is composed of Duroc and the other of Hampshire breeders. One breeder of Chester White hogs, in order to establish some of the boys, has given five excellent gilts to as many boys, with the understanding that they will return to him any gilt he may choose from the first litter.

PAY LESS FOR BETTER BULLS.

A survey recently made in connection with the "Better Sires—Better Stock" campaign carried on by the United States Department of Agriculture shows a general ratio of 1 bull to every 18.9 cows. Experience, however, in Pennsylvania, the State which leads in the number of bull associations, shows that 93 bulls are sufficient for the 5,604 cows belonging to members of the bull associations, or an average of about 1 bull for every 60 cows. These figures are taken from the bull-association directory recently issued by the Dairy Division, United States Department of Agriculture.

If the members of these associations owned their bulls individually, at the usual ratio of 1 bull for every 18.9 cows, they would need 296 bulls instead of 93. Yet the 93 bulls give the required service as effectively as 296 would do, and in fact better, because the resulting offspring are better. The association bulls are of better quality than the ordinary run of sires privately owned, and their daughters are apt to be better-producing cows.

Even this does not tell the whole story. After an individually owned sire has been used for about two years it is usually necessary to get a new one. In eight years, therefore, these Pennsylvania farmers, if they owned their bulls separately, would have to provide themselves with four times 296 bulls, or 1,184; whereas in the bull associations at the end of two years they simply move each bull to another block. The original 93 bulls, if they all live and do well, can be used for the whole eight years. There is quite a difference between the cost of 93 bulls and that of 1,184, to say nothing of the difference in their usefulness.

The members of bull associations sometimes pay less and always receive more for their money than cow owners who go it alone.

STOCKMEN GIVE REASONS FOR EXISTENCE OF RUNTS

More than 800 replies have been received from practical stock breeders and owners in response to a questionnaire sent out by the United States Department of Agriculture in an effort to determine the cause and possible means of preventing runts in live stock. The large number of replies, department specialists say, indicates the interest which stock breeders feel in this subject. Some of the questions asked in the questionnaire are: "From your experience, in what classes of live stock do the most runts appear (cattle, hogs, sheep, etc.)?" "In what stage of an animal's development does runtiness appear chiefly?" "In your experience what are the most practical methods of preventing runts?" "Does it pay to raise runts to market size?" "To what extent would your financial returns from live stock be increased if you had no runts?"

The replies thus far received show that inferior breeding and poor feeding are jointly responsible for nearly two-thirds of the runts among live stock, and indicate that at least 7 per cent of farm live stock is commonly in the runty class. Detailed data on the times when runtiness appears, financial losses caused by runty stock, methods of prevention, when it pays and when it does not pay to raise runty stock are now being prepared by the department for distribution to the public.

Pleasure and Profit Gained from Diary of Happenings and Experience on Farm

A well-kept diary is the most interesting and valuable volume in its owner's library, and the determination to maintain such a record frequently is expressed in the form of a New Year's resolution. Unfortunately, however, that is the first "good intention" permitted to lapse, observations by the United States Department of Agriculture have shown.

Valuable in the Future.

For the farmer, the diary will preserve a record of farm happenings and personal experiences which will be valuable in the future conduct of his business. If, when he finds his alfalfa field swarming with grasshoppers, he can look back in his diary to a summer 10 years before and find the poison-bait formula that controlled the insect then, he will save much valuable time. He may wish to know the exact location of a tile drain that was laid down when he was a youngster. If the event was noted in his own, or his father's diary, a 10-minute perusal will give him more definite information than a day's digging with a spade. There are dozens of farm problems encountered every year that might be solved more easily if the farmer had access to a complete chronological history of his property.

Such a diary entry as that which follows may not seem of value at the time it is made, but it may influence a business transaction or earn a farm profit when it is reread under different circumstances:

"Wednesday, May 12, 1920.

"Weather warm and cloudy. Limed the 5-acre lot south of the orchard. Applied 1 ton to the acre and inoculated for alfalfa with soil from the Briggs lot. Met James Leonard and agreed on the repairs of the line fence between his farm and mine. He maintains the fence as far as the Mill Brook, and I am to care for it from that point to the shore of the pond. Took chickens out of incubator. Had 136 from 180 eggs."

Three Purposes of Farm Records.

The diary may be given a prominent place in the bookkeeping records of the farm business. Generally speaking, there are three purposes to be served by farm accounts:

(1) To determine the farm investment, receipts, expenses, and the net income of the business.

(2) To furnish the net returns from any individual farm enterprise and to supply specific information as to its details.

(3) To obtain a memorandum of what other people owe you and what you owe them.

The blank forms necessary for a simple accounting system can be worked out by the farmer himself, or he can apply a system recommended by his county agent. He also can obtain information direct from the Office of Farm Management and Farm Economics, United States Department of Agriculture. The chief advantage of a farm accounting system, which is a part of the farm diary, is in the additional interest furnished by the personal items. The diary supplies items of supplementary interest which usually are left out of the accounts. Without the diary, the task of keeping the books of the farm business becomes dry and uninteresting.

Only persistency and practice will make one an adept at writing a diary. The only rule which can be followed is that the entries must be kept interesting, and in choosing an interesting high light in the day's work one must have an eye to the future, as well as to the present. It is important to write the records regularly. Make entries in the diary every evening at a certain time, and consider it as a part of the daily routine. Once the owner commences to slight his diary, its failure is certain. Man's memory is weaker than it seems, and it can seldom be trusted to hold accurately to the things that happened yesterday.

Putting off a writing until the following evening means the end of historical accuracy, and with the passing of minute accuracy goes also the value of the diary as a record of business and personal affairs.

Best Materials Essential.

It never pays to use inferior materials in the making of a farm diary; the work is important enough to merit the use of good tools. Good paper and binding, a good pen, and ink that will not fade in a few years are essentials in preparing a volume that will grow in value and interest as its age increases. It is a mistake to think that a small blank book is sufficient. The limited size of the sheets makes writing cramped and uncomfortable and detracts from the pleasure of writing up the record.

While a diary can hardly supply the required amount of bookkeeping for a large and extensive farm business, it does record facts and figures that are never preserved in any other form.

MARKED PROGRESS REPORTED IN BETTER MARKETING WORK

Investigational and demonstrational work in the marketing of farm products is being carried on by the Bureau of Markets, United States Department of Agriculture, in cooperation with 33 States. This is a larger number than has ever shown interest in this work before. The work in each State is performed under the direction of specialists in marketing, whose functions are to assist in coordinating the marketing activities of the various agencies in the State, and to give practical assistance in every other way. Specialists of the department say this work is important because it affords a means of developing a consistent national marketing policy. Leaders seem to agree that the most promising line is the one looking toward a consistent, interknit national policy that will prevent duplication of effort, cross-purposes, and conflicting currents of trade.

While complete figures are not available relative to the work of the agents in marketing, those at hand show that they assisted producers to form 183 marketing organizations, including 50 live-stock shipping associations; 57 fruit and vegetable associations; 12 credit unions; and 19 federations of existing associations. One hundred and thirty-eight groups of producers were assisted in making cooperative sales, many of which comprised one or more carloads of live stock. One of these sales involved 417 head of cattle, which, it is said, were sold for $2,508.97 more than they would have brought had their owners placed them on the market individually the day of the sale. Assistance in organizing or grading was given to 166 wool pools, which handled over 10,000,000 pounds of wool. Assistance was given cooperative enterprises in three States in solving their accounting problems.

"The development of good live stock depends not only on the use of high-class animals, but on systematic methods." This is the comment of a South Carolina farmer who has contributed his experiences to the United States Department of Agriculture, as part of an investigation to determine the cause of inferior and undersized live stock.

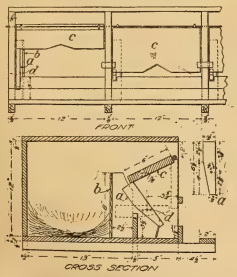
"Most failures with live stock," this farmer declares, "can be attributed to lack of a definite aim in breeding."

Loudest Cackler Not Always Best Layer, But Trap Nest Pins Her Down to Facts

The most prepossessing hen is not always the most industrious layer. She may be the loudest cackler, but if her owner uses trap nests she can not fool him. He can check up on results. The trap nest is so arranged that when the hen enters she is confined until released by the attendant. Specialists of the United States Department of Agriculture say that trap nests may be used to advantage by the best breeders of hens. It adds mechanical precision to judgment and experience in developing the flock and maintaining it at a high standard of egg production. It tames the birds and tends to stimulate laying. It furnishes definite knowledge of the traits and habits of each hen. It furnishes the most satisfactory basis for breeding, and it eliminates the nonproductive hen.

Careful Observation Needed.

In flocks of 50 or more, a three-compartment trap nest should be provided for every 10 hens. In smaller flocks, a slightly larger proportion of nests is needed. Numbered bands are placed on the legs of the hens and a record is kept of their egg production. Frequent visits to the nests are necessary, especially when the hens are laying freely and during warm weather. There should never be less than three visits a day, and four or five would be better.



Details of construction of trap nest.

The trap nest may be placed on the walls of the pen or attached to the underside of the dropping board. If the latter course is taken, the front of the nest should face the pen. The rear may be made of wire to allow good ventilation.

The dropping board will serve as a top. If the nest is placed on the wall, slats or wire at a sharp angle should extend from the front of the nest to the wall to prevent hens from roosting on the top.

Directions for Constructing Trap Nest.

The trap nest is so constructed that, when the hen enters, her back raises the door. This releases the catch or trigger and allows the door to close. The catch, regulated by a screw or nail at the lower inside edge, should be set so that it just holds the door. It should have a washer on the screw to prevent sticking, and a guard to keep away the nesting material. A variation may be made for large or small hens by shortening or lengthening the catch which supports the door or by adjusting the size of the triangular notch in the door itself.

The following directions are given by the department's poultry specialists for constructing a three-compartment trap nest:

Cut four ⅞-inch boards for ends and partitions, 12 inches wide by 19 inches long; enough ½-inch boards, 39½ inches long, laid lengthwise, to cover the top, back, and bottom; and one strip, 39½ inches long and 1½ inches wide, for the front of the nests. Cut three pieces of ½-inch boards, 12 inches long and 3 inches high, to hold the nesting material away from the door.

Nail the top, back, and bottom to the ends and partitions, insert the 3-inch strips in the nests, and make the guard, nailing it to the left side of the nest. Bore a hole in the catch large enough that the catch will move freely when screwed into position on the side. Place a washer on the screw between the catch and the side of the nest. Insert a screw at the lower edge of the catch to stop it when set, so that the catch will just hold the door.

Build ⅞-Inch Doors.

Make the doors of ⅞-inch material, 12 inches by 6 inches, and cut a triangular notch in the center, 4 inches wide at the bottom. Put two screw eyes in the top of the doors and bore holes in the front of the nests, 2 inches below the top (inside measurement), through which a $\frac{3}{16}$-inch wire is run to support the doors.

Attach to the front of the nests a narrow strip upon which the hens can jump. Place a button or block of wood on the front of each partition to hold the door when the nest is closed.

If the nests are to be placed directly below the dropping board, a wire top should be used with a 5-inch strip of wood on the front edge of the top to stiffen them.

Lime-Sulphur Spray Will Control Tear-Stain on Citrus Fruit

Applications of lime-sulphur spray to control rust mites on citrus fruits has been found to be equally effective for the control of tear-stain. Specialists of the United States Department of Agriculture have outlined the results of experiments in Department Bulletin 924, Tear-Stain of Citrus Fruits, recently published. While tear-stained fruit seems to have the flavor and keeping qualities equal to that which is free from the blemish, specialists say that growers in Florida sustain losses every year because the disease makes the fruit unsightly, and reduces its market value.

During the season of 1917, when the department's specialists were conducting spraying experiments in a grapefruit grove in Florida for the control of citrus scab, it was observed that tear-stain was almost entirely absent from plats that received several applications of lime-sulphur solution, though it was quite prevalent where Bordeaux mixture had been applied during the scab-spraying season. Since the first observation, many similar manifestations of the lack of control of tear-stain by copper sprays have appeared in the experimental plats.

Ordinarily the scab-spraying season in Florida begins in February when the spring growth starts, and extends over a period of 2 or 3 months. It is followed rather closely by a period of attack by rust mites, which usually are most abundant during May and June, and are readily controlled by 2 or 3 applications of lime-sulphur solution diluted 1 to 66. In general, the results of the spraying experiments, the bulletin says, show that tear-stain was controlled in that part of the grove which received applications of lime-sulphur solution shortly before the period when rust mites are in greatest number. Tear-stain was materially reduced on that part of the grove which received applications of the lime-sulphur spray considerably in advance of the appearance of rust mites, and the blemish was not reduced on fruit which was sprayed with copper mixtures.

Practically all tear-stain on Florida-grown fruit is associated with rust mites and, according to the bulletin, can be readily controlled by spraying to control these mites. When sulphur sprays are applied for scab during the early spring, which usually is too soon for the best rust-mite control, and are not followed

by the regular rust-mite application, tear-stain is greatly reduced. But when the application is made later at the best time to control rust mite, tear-staining is practically eliminated.

CIVIL-SERVICE EXAMINATIONS.

The United States Civil Service Commission announces open competitive examinations to fill positions in the Department of Agriculture:

Scientific assistant, for both men and women, to fill vacancies in the department as follows: (1) Agronomy; (2) Animal husbandry; (3) Dairy farming; (4) Forage crops; (5) Home economics and calorimetry; (6) Horticulture; (7) Landscape gardening; (8) Plant breeding; (9) Plant pathology; (10) Plant physiology; (11) Pomology; (12) Seed testing; (13) Soil bacteriology; (14) Soil surveying. Salary ranges from $1,320 to $1,620 a year. Dates of examination, April 13 and 14. Assistant dairy husbandman, Bureau of Animal Industry; salary $1,680 to $2,220. Date of examination, April 13, 1921. Applicants for the above positions should apply for Form 1312, stating title of examination desired, to the Civil Service Commission, Washington, D. C.

Telegraph operator, Bureau of Markets; salary, $900 to $1,200 a year. Examination March 23, April 27, and May 25, 1921. Apply to Civil Service Commission for Forms 304 and 1140.

Predatory animal inspector; biological assistant; salary, $1,440 to $2,440 a year; to fill vacancies in the Bureau of Biological Survey. Receipt of applications closes April 5, 1921. Apply to Civil Service Commission for Form 2118.

Dairy husbandman, Bureau of Animal Industry; salary, $2,500 to $3,500 a year. Apply for Form 2118, stating title of examination desired, to Civil Service Commission, Washington, D. C. Receipt of applications closes March 29, 1921.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended February 26, 1921:

House Cleaning Made Easier. Farmers' Bulletin 1180.

Pork on the Farm; Killing, Curing, and Canning. Farmers' Bulletin 1186.

Tear-Stain of Citrus Fruits. Department Bulletin No. 924.

How Teachers May Use Farmers' Bulletin 1125: Forage for the Cotton Belt. Department Circular 158.

How Teachers May Use Farmers' Bulletin 1175: Better Seed Corn. Department Circular 156.

The Work of the Huntley Reclamation Project Experiment Farm in 1919. Department Circular 147.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1180; Department Bulletin No. 924: Department Circular 147.

ECONOMY NEEDED TO BUILD UP FERTILIZER INDUSTRY IN 1921

(*Continued from page 1.*)

acid phosphate was from $9.51 to $9.94 a ton at Norfolk.

Potash muriate was quoted from $2.75 to $3 per unit in New York at the beginning of 1920, but began to drop in May, and touched $1.50 in January, 1921. Potassium sulphate dropped from $4 to $2.15 per unit. In 1913 potassium muriate sold at 76 and 77 cents per unit, and potassium sulphate at 94 cents.

Incomplete figures show that spring sales were unusually large. The fall sales were scarcely more than 50 or 60 per cent of normal. It may fairly be said that sales of fertilizers in 1920 when finally compiled will show somewhere around 7,000,000 tons.

Price Concessions Are Needed.

An effort was made in December, 1920, to get fertilizer manufacturers to meet the situation, stabilize prices, stimulate buying, and restore the confidence of the farmers by necessary price concessions, but this they did not do.

"On account of the situation as described," the statement continues, "the fertilizer season of 1921 is at least three months late. The manufacturers have not yet established a permanent price basis, and while they are trying to sell at the highest possible prices there is a great deal of reselling, and there are heavy cuts when large quantities are ordered for cash.

"So the market now is largely a resale, and a competitive market for such prices and such terms as can be obtained, with very wide variations in prices for the same material and with the buying power subnormal."

Reference is made to the peculiar conditions existing in the Florida phosphate rock industry, where it is said the larger fertilizer manufacturers have secured contract rock at not to exceed $6 a ton, making the cost of the material in bulk acid phosphate $12 or $13 a ton, while manufacturers not holding contracts have been obliged to pay $11 and $12 a ton for rock, and the noncontract sales of bulk acid phosphate ran from $20 to $22 a ton.

Phosphate Monopoly Exists.

"The smaller manufacturers and dry mixers are entirely dependent upon their larger competitors for the acid phosphate or the rock phosphate they need. They then enter into competition in the sale of fertilizers with their larger competitors who own and control the phosphate field, and who sell the phosphate to them on their own terms. It is a matter for serious consideration that one group of fertilizer manufacturers having large capital should be permitted to exercise practical control of a natural deposit, and the manufacture of acid phosphate therefrom as against the interests of a large number of smaller manufacturers who have been compelled to pay excessive prices for acid phosphate to the larger manufacturers, with whom they are competing in the sales of their mixed fertilizers."

The report recommends a thorough investigation of the acid phosphate industry from the mines to the factories to see whether relief can not be afforded smaller manufacturers and farmers. It is predicted that the nitrogen situation, now complex, with prices near prewar basis, will adjust itself under the ordinary laws of trade.

Noting the drop in potash prices the opinion is expressed that the American potash industry must be built up by economical methods of production. Enactment of a law governing interstate business in fertilizer is urged as a provision against the suspension of the Lever law. The proposed new law, drafted by the chairman of the House Committee on Agriculture, does not provide price control.

Atmospheric conditions in homes, say specialists of the United States Department of Agriculture, are frequently not maintained as they should be. Houses are often overheated. In most cases practically no thought is given to humidity, or air moistening. Physicians insist that an overheated house is unhealthy, and that colds, sore throats, coughs, and the tendency to be nervous and feverish may be attributed to continually breathing air having too little moisture in it.

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1921

Weekly News Letter

Published by the
United States Department of Agriculture
Washington

VOL. VIII. MARCH 16, 1921 No. 33

Effect of Depression on Farmer Not Understood, Says Sec'y Wallace

Decline in Prices of Farm Products Out of Proportion to Other Things.

If Present Situation Continues Trouble Will Be Communicated to All Other Interests—Problem for Entire Nation.

Henry C. Wallace, Secretary of Agriculture, has issued the following statement on the agricultural situation:

"Let me speak first of the agricultural situation in general. I think if we can get an understanding of this, the proper work of the Department of Agriculture will become apparent. We must approach it from two angles—first, present conditions, which are decidedly unusual, and second, conditions which may develop in the future.

"I doubt whether the people of the East realize just what has happened to the farmers of the producing sections. Take the grain and live-stock producing country of the Central West, for example, and I speak of this because it is the region with which I am most familiar, and also because it is the region which gives us our great surplus crops. We have the finest rural civilization, taken as a whole, the world has ever seen; our farmers average very high in intelligence; they produce more per man than almost any other farmers in the world; they have adopted the most advanced system of extensive farming yet developed. Notwithstanding all this, they are now in a most trying period and are suffering severe financial losses. Farmers throughout the Nation, especially those in the South and West, are experiencing exactly the same trouble. The cotton farmers of the South, the rice farmers, the cattle and sheep growers of the Far West; the fruit growers—all are passing through this same valley of discouragement and financial stress.

"People who are not familiar with agriculture find it hard to understand the situation. They refuse to believe that the depression is as serious as it

(*Continued on page 6.*)

EXTRACTS FROM SECRETARY WALLACE'S STATEMENT.

While the farmer is selling the things he produces at prices no higher, and, for great surplus crops, lower than the prewar normal, he must buy practically everything he needs at prices from 50 to 150 per cent above the prewar normal. The severe agricultural depression is inevitable as long as such a condition exists, and this depression will certainly be communicated to industry and business generally.

It is a terrible indictment of our modern civilization when this great country is in the period of what almost might be called economic chaos because of our great surplus food supply, while across the seas, in both directions, almost half the world is suffering for want of food.

It is a time for every man who can help to take hold. As in the days when we dragged our fire engines by hand to the scene of the fire and every good citizen rushed out and took hold of the long rope and did his bit, so we must do now.

We can not hope to reach normal conditions until we arrive on a price level which will be fair to all our people and all products. Farm products must come up in price and other products come down until the normal relation between them has been restored.

This talk of bringing prices, whether farm prices or other prices, back to the prewar normal is morally wrong and economically impossible. We incurred a heavy national debt on the inflated prices. If we could force all prices back to the prewar normal (which we can not) it would be equivalent to just about doubling that debt. We can pay off our debts much easier if we maintain a price level more nearly the level at which the debts were incurred.

We will get through this period. The Nation is not going bankrupt. The farmers are not going bankrupt. Neither are they going to lie down on their job. Gradually farm prices will be brought into fair relation with other prices and we will go ahead hitting on all cylinders.

We are the best producers in the world, but our sales system is very bad, indeed. We must study everything which influences both production and price.

CHINCH-BUG DAMAGE LIKELY UNLESS WET WEATHER COMES

Wheat Fields Should Be Guarded if the Next Corn Crop Is to Be Harvested.

Heavy Infestation Would Mean An Attack on the Larger Grain—Protective Methods Urged by Specialists—Trap Bugs Before Wheat Ripens.

Chinch bugs, one of the worst enemies of wheat and corn, have already begun to appear, the first report coming from St. Louis County, Mo., where the pests wintered on cornstalks shocked in a wheat field, and were scattered to the young plants in husking. Entomologists of the United States Department of Agriculture fear destructive outbreaks in other parts of the country unless unusually damp weather checks breeding.

Destroy Winter Quarters.

The first and one of the most effective measures to prevent increase of these pests is to destroy the bugs in their winter quarters, usually in dried grass and clumps of weeds or piles of rubbish left about the fields. The burning of these will destroy thousands of bugs. Where matted grass has remained green, and will not burn, a flock of sheep turned into the fields usually will eat off all living vegetation, and trample the ground so as to destroy all protective covering for the bugs. One measure that has been tried

with good results is to plant small patches of millet or other grain early in the spring, and thus bait the adult bugs as they come from their places of hibernation. The bugs will congregate in these early patches and deposit their eggs there, and eggs, young, and adults can be dealt with satisfactorily a little later by plowing both bugs and their food under, and harrowing and rolling the ground to keep the adults from crawling to the surface.

The department urges farmers especially to watch the wheat fields. A heavy infestation of chinch bugs, it says, means an attack on the cornfields when the wheat is harvested. Trap the bugs, and save the corn, the specialists advise. Prepare the trap before the wheat ripens.

Three practicable methods of keeping chinch bugs out of cornfields are suggested. Use the method most convenient.

Drag a stone boat or similar contrivance entirely around the infested wheat field, or field to be protected, until a firm, smooth bath is formed, entirely free of vegetation. Form a groove by driving an empty wagon along the path with the wheels on one side in the center of it. Fill the groove with liquid gas tar or very heavy road oil. Dig holes 12 to 18 inches deep and 20 to 30 feet apart on the edge of the tar line nearest the approaching bugs. Be careful to leave no bare ground between the tar line and holes. The bugs will not cross the tar, but travel along the tar line and fall into the holes, when they may be killed with a little kerosene. When large numbers of bugs are in the holes it is cheaper to cover them with water and add kerosene to form a coating on top.

How to Do the Work.

A convenient way to apply tar or road oil is to use a pail with a hole punched in the bottom. Use a long stick as a stopper for the hole.

Plow a deep furrow around the field. Throw the dirt toward the wheat which the bugs are leaving. Smooth the side of the furrow farthest from the bugs with a hoe or spade and lay a line of creosote along the upper edge. Dig postholes at the bottom of the furrow and trap the bugs as in the first method.

When neither of the above methods is effective, plow a deep furrow around the field and drag a log back and forth until a dusty ditch is formed into which the bugs will fall and from which they can not escape. Burn the bugs in the ditch with a gasoline torch or use posthole traps as in the other methods. Drag the ditch after a rain to keep it in good condition.

There's a chance to save your cornfield after the bugs reach the first rows. Spraying the bugs will kill such of them as are reached by the spray and possibly prevent the infestation of the whole field.

Kerosene emulsion is the most effective spray and will injure corn the least. Some corn is likely to be injured—a few rows of corn sacrificed that the remainder of the field may be saved.

Make kerosene emulsion by dissolving one-half pound of common laundry soap in one gallon of boiling, soft water. Churn the mixture into suds and add, while still hot, two gallons of kerosene. Agitate or churn with a force pump until creamlike in appearance. Dilute 1 gallon of the mixture with 15 gallons of water.

Long-Staple Cotton on Irrigated Land Thrives in Arizona and California

The cotton industry is being reestablished in the irrigated valleys of Arizona and California by the United States Department of Agriculture, with varieties better suited to soil and climate than those favored by farmers when the business was young. Cotton was grown in the San Joaquin Valley, in California, about 50 years ago, but the planters found it increasingly difficult to compete with the short-staple cotton grown in the eastern cotton belt. The enterprise was abandoned when it became apparent that labor and transportation facilities were difficult to maintain.

New Cultural Methods Used.

New cultural methods are being used, and long-staple cotton instead of the old short-staple varieties is being planted with great success. A standardized strain of Egyptian long-staple cotton has been developed which is adapted to the soil and climatic conditions in these irrigated valleys.

In districts where cotton is comparatively a new crop the choice of varieties is important. Comparisons made by the Department of Agriculture for the last six years show the Pima variety of Egyptian cotton well suited to the greater part of the San Joaquin Valley, including Kern County northward to Fresno and Madera Counties. Pima is a doubtful crop north of Madera County, but here it may be replaced by Durango and other varieties of Upland cotton. These latter varieties may be planted as far north as Turlock, in Stanislaus County. Pima is a superior type, and there is little need for considering any other variety in the districts where it may be grown.

The profits from a successful crop of long-staple cotton may tempt the farmer to plant too much. Cotton specialists warn against this, pointing out that cotton needs heavy irrigation during July and August. It is better to begin the cotton planting upon a comparatively small scale, with the rest of the land in crops that will not require as much water in the summer. A small planting means better care, and usually better cotton, which, naturally, means a better price.

Long-staple cotton in the districts indicated does well as an interplanted crop and removes the risk of depending for an income on a single crop. A farmer in Kern County, Calif., planted cotton in 1918 between young apricot trees in their third year of growth, and from about 2 acres he obtained nearly $500 worth of cotton. Another farmer planted Pima cotton between the rows in a 12-acre plat of grapevines and obtained a yield of about 1 bale to the acre. Grown in this way the cotton is as good as when grown alone. Grape experts declare the young vines are equal to those grown without an intercrop.

Alkali Soil Should Be Avoided.

Any soil that will grow good crops of alfalfa and other deep-rooted field crops will grow good cotton. A medium sandy soil is an ideal type, because it is easily worked and holds water well. Cotton will stand a small amount of alkali, but land having an excess of alkali should be avoided. The best yields of cotton have come from fields previously in alfalfa, and such fields usually require less water than others.

The "lay" of the land is of more importance than the type of soil; a steeper grade may be given the land made up of light soil which absorbs water readily. For the best results the land should be nearly level. It is easier to control the irrigation water where there is little or no slope.

The details of land preparation and planting have been put in concrete form by the Bureau of Plant Industry, United States Department of Agriculture, in Circular 164. The circular discusses the methods of cultivation, irrigation, picking, and ginning worked out in the Government's experiments with this crop. The circular is illustrated with 11 photographs taken in the fields where the work is being done.

CENSUS SHOWS MANY FARMS HAVE PUREBRED LIVE STOCK

Information Valuable to the Nation's Animal Industry Available for the First Time.

Statistical Experts and Officials of the Department of Agriculture Tabulate Returns from Ten States—Estimates Give Way to Facts.

Returns from the agricultural census of 1920 indicate that the purebred livestock industry is of greater extent than many persons had supposed. Officials in the Bureau of Animal Industry, United States Department of Agriculture, assisted statistical experts of the Bureau of Census in preparing the original schedules, and are aiding in compiling the results.

Former Estimates Unsatisfactory.

Formerly the only information of comprehensive scope on the extent of this industry has been very unsatisfactory estimates. No other country, department officials point out, has dependable figures on the number of purebred live stock such as the 1920 census has provided. Purebreds, as considered by the census schedules, include animals either registered or eligible to registry. The 10 States for which purebred live-stock figures have been reported are South Carolina, Virginia, Delaware, West Virginia, Oklahoma, Massachusetts, Michigan, Ohio, New Hampshire, and Indiana. The States are mentioned according to the percentage of farms reporting purebreds. A condensed summary of the figures follows:

FARMS REPORTING PUREBRED LIVE STOCK.

[Fourteenth U. S. Census. Basic figures furnished by U. S. Census Bureau; percentages and arrangement by U. S. Department of Agriculture.]

	All farms, number.	Farms reporting purebreds.		
		Number of farms.		Per cent of farms.
South Carolina	192,664			
Purebreds of any kind		6,188		3.21
Horses		70		.04
All cattle		2,360		1.22
Beef cattle			363	.19
Dairy cattle			2,002	1.04
Sheep		31		.02
Hogs		4,699		2.44
Virginia	186,011			
Purebreds of any kind		8,895		4.77
Horses		566		.30
All cattle		4,587		2.47
Beef cattle			2,102	1.13
Dairy cattle			2,517	1.35
Sheep		688		.37
Hogs		5,262		2.83
Delaware	10,128			
Purebreds of any kind		637		6.29
Horses		29		.29
All cattle (all but 16 are dairy)		496		4.99
Beef cattle (none reported)				
Dairy cattle (see above)				
Sheep (none reported)				
Hogs		173		1.75
West Virginia	87,289			
Purebreds of any kind		7,136		8.18
Horses		321		.37
All cattle		3,935		4.51
Beef cattle			2,533	2.92
Dairy cattle			1,424	1.63
Sheep		1,111		1.27
Hogs		3,224		3.69
Oklahoma	191,731			
Purebreds of any kind		21,228		11.07
Horses		1,454		.76
All cattle		11,725		6.12
Beef cattle			8,498	4.43
Dairy cattle			3,434	1.79
Sheep		406		.02
Hogs		10,797		5.63
Massachusetts	31,982			
Purebreds of any kind		3,546		11.09
Horses		153		.48
All cattle		2,959		9.25
Beef cattle			149	.47
Dairy cattle			2,831	8.85
Sheep		129		.40
Hogs		785		2.45
Michigan	196,647			
Purebreds of any kind		21,873		11.12
Horses		1,293		.66
All cattle		14,301		7.27
Beef cattle			4,461	2.27
Dairy cattle			10,004	5.09
Sheep		2,639		1.34
Hogs		7,656		3.89
Ohio	256,699			
Purebreds of any kind		33,365		13.00
Horses		2,906		1.13
All cattle		19,471		7.59
Beef cattle			6,068	2.36
Dairy cattle			13,574	5.29
Sheep		2,909		1.13
Hogs		14,692		5.72
New Hampshire	20,523			
Purebreds of any kind		2,775		13.52
Horses		116		.55
All cattle		2,440		11.89
Beef cattle			359	1.74
Dairy cattle			2,140	10.43
Sheep		135		.66
Hogs		468		2.28
Indiana	205,124			
Purebreds of any kind		31,127		15.17
Horses		2,074		1.01
All cattle		11,876		5.79
Beef cattle			6,611	3.22
Dairy cattle			5,358	2.61
Sheep		1,349		.66
Hogs		22,346		10.89

Official Comment on Figures.

In discussing the figures in the table George M. Rommel, Chief of the Animal Husbandry Division of the department, emphasizes their value as a means of showing breeding centers for purebred animals of various kinds. In Indiana, for instance, where purebred stock is reported by about 15 per cent of all farms, the purebreds are principally hogs and cattle. Supplementary census data for that State show that Poland-China hogs, Shorthorns among beef cattle, Jerseys among dairy cattle, Shropshire sheep, and Percheron horses are the breeds kept in greatest number. The importance of New Hampshire as a purebred live-stock State is due principally to its dairy cattle. Thus the figures show the principal centers in which purebred live stock of various kinds and breeds are raised. Such information is extremely valuable to foreign buyers and to persons in the United States who wish to purchase or inspect breeds of live stock in which they are interested.

Predominating Breeds Are Shown.

A study of the predominating breeds in the different States is of particular interest. In South Carolina, standardbred horses are reported in largest numbers, with Percherons second; in Virginia, Percherons lead, with thoroughbreds second, and standardbreds third; in West Virginia, farms reporting Percherons are greatly in the lead, with standardbreds and Belgians occupying second place, and farms having American saddle horses third. There are similar data for the other States.

The Shorthorn breed is first in Virginia, Oklahoma, Massachusetts, Michigan, Ohio, and Indiana. In beef cattle Hereford farms rank first in South Carolina, West Virginia, and New Hampshire. Aberdeen-Angus cattle appear as second or third in a majority of States.

Among the dairy breeds the Holsteins are most numerous in Delaware, Massachusetts, Michigan, New Hampshire, and Ohio; Jerseys lead in South Carolina, Virginia, West Virginia, Oklahoma, and Indiana.

Shropshire sheep are the predominating breed in nearly every State thus far reported except in Ohio, where Merinos lead.

Figures Show Progress.

The predominating breeds of hogs, according to the census figures, are the Poland-Chinas and Duroc Jerseys. Poland-Chinas lead in West Virginia, Oklahoma, Ohio, and Indiana. Durocs are first in South Carolina, Virginia, and Michigan.

From familiarity with live-stock activities throughout the country, officials in the Bureau of Animal Industry who have scrutinized the figures regard them as accurate, very valuable, and in conformance with conditions known to exist. Certain figures which the casual observer might question are readily explained, one official declared. For instance, in Indiana the Spotted Poland-China breed of hogs is the third most numerous of all breeds. In fact, it greatly outnumbers some of the older breeds, but when it is remembered that the breed originated and has been widely developed in Indiana such knowledge verifies the dependability of the census figures.

Though familiar with the strides which improved live stock has been making in

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Weekly News Letter

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METHODS OF COLONIZING CUT-OVER LANDS STUDIED

Land settlement and colonization in the cut-over regions of the three Great Lake States—Minnesota, Wisconsin, and Michigan—has been the subject of an extensive series of studies conducted during the past year by the United States Department of Agriculture. These studies, carried on in cooperation with the Minnesota Experiment Station, the Wisconsin Experiment Station, and the University of Michigan, include investigation of the various settlement agencies with a view to determining the good and bad characteristics of the methods employed. Practically all the important colonization and settlement companies operating in this region have been visited, and, in addition to this, typical settlement projects are being extensively studied.

NEW METHOD OF CARRYING PLANT DISEASE DISCOVERED

Investigation of cucumber-leaf wilt by plant pathologists of the United States Department of Agriculture have revealed a hitherto unknown method of plant disease carrying. They have found that the striped cucumber beetles not only carry the wilt bacteria in their jaws, spreading infection when they gnaw into a leaf, but that in some cases they hold the bacteria over an entire winter in their intestinal tract and deposit them in the spring, where they will spread infection the first time they come in touch with a gnawed or broken leaf.

The carrying of disease germs from one animal to another by insects was first established as a fact through the investigation of Texas fever of cattle, often termed tick fever, by the United States Department of Agriculture some 30 years ago. That malaria and yellow fever were spread by mosquitoes and African sleeping sickness by the tse-tse fly was later established as facts; and since then instances have been found where plant diseases also were spread by insects. This is the first instance known to science, however, where insects carried the bacteria in their systems through an entire hibernation season to do damage in the spring.

COMES TO AMERICA TO LEARN EXTENSION METHODS

Madame Devouge, in charge of domestic science work at the normal school, Grignon, France, is, by appointment of the French Minister of Agriculture, in the United States studying the home demonstration work, as organized and conducted by the United States Department of Agriculture and the State agricultural colleges, with the ultimate purpose of establishing a similar system of extension work in France.

The American Committee for Devastated France is paying Madame Devouge's expenses. This committee has arranged in the last two years for four American canning specialists to go to France during the summer to teach American methods of food preservation. Madame Devouge worked some of the time each year with the American unit and last summer her daughter accompanied the Americans over their entire itinerary.

Madame Devouge is now in Louisiana. Previously she had made stays of varying length in Washington, Florida, and Mississippi. In the latter States she attended the annual State meeting of the county agents. After a visit to Texas she plans making a tour through the Northern and Western States before she sails for France in April. On her return to her home country she will probably have charge of the proposed extension work there.

BAGS FOR GRAIN SAMPLES DEVELOPED BY DEPARTMENT

A satisfactory bag for grain samples has been developed by the United States Department of Agriculture. These bags are made of a good grade of duck, treated by the manufacturer with a water and mildew proof preparation. After treatment the cloth is practically as pliable as that used formerly in making grain sample bags. One bag, taken at random from a shipment, was filled with water, and allowed to hang until it showed signs of leaking. It was about half an hour before water began to drip from a few places along the seam, but no signs of moisture were evident on the cloth.

In selecting the cloth to be used the department specialists collected and tested a number of waterproof materials from various manufacturing concerns. Some cloth was found to be of flimsy construction, not waterproof, too rigid, too expensive, or imparted a bad odor to the grain. Two shipments of the bags made from the new material have been distributed to various supervision officers of the department. If these bags are found satisfactory in actual work, as the specialists believe they will, metal containers for samples of grain can be dispensed with except for shipments by mail.

FUNDS AVAILABLE FOR ROAD BUILDING AND MAINTENANCE

Approximately $622,000,000 is now known to be available for road and bridge construction and maintenance during the year 1921, according to information sent to the Bureau of Public Roads, United States Department of Agriculture, by the several State highway departments. Should pending legislation be passed by Congress and additional appropriations be made for Federal aid, this sum would be increased by the amount of the Federal appropriation.

The approximate amounts available to each of the States from local, State, and Federal sources for road and bridge expenditure are: Alabama, $9,000,000; Arizona, $8,000,000; Arkansas, $12,000,000; California, $26,000,000; Colorado, $7,000,000; Connecticut, $8,000,000; Delaware, $3,500,000; Florida, $7,725,000; Georgia, $10,000,000; Idaho, $4,500,000; Illinois, $20,000,000; Indiana, $9,500,000; Iowa, $37,000,000; Kansas, $20,000,000; Kentucky, $8,000,000; Louisiana, $6,000,000; Maine, $7,500,000; Maryland, $4,800,000; Massachusetts, $8,000,000; Michigan, $20,000,000; Minnesota, $20,000,000; Mississippi, $11,000,000; Missouri, $15,000,000; Montana, $8,500,000; Nebraska, $6,000,000; Nevada, $3,500,000; New Hampshire, $2,500,000; New Jersey, $16,000,000; New Mexico, $4,000,000; New York, $55,000,000; North Carolina, $6.500,000; North Dakota, $7,000,000; Ohio, $35,000,000; Oklahoma, $8,000,000; Oregon, $10,000,000; Pennsylvania, $30,000,000; Rhode Island, $1,700,000; South Carolina, $6,000,000; South Dakota, $7,000,000; Tennessee, $10,275,000; Texas, $60.000,000; Utah, $6,000,000; Vermont, $2,000,000; Virginia, $10,000,000; Washington, $14,000,000; West Virginia, $8,000.000; Wisconsin, $19,500,000; Wyoming, $3,000,000.

Pulpwood Mills in Eastern and Lake States Show Increased 1920 Production

Pulpwood consumption by mills in New York, New England, and the Lake States was 17.7 per cent greater in 1920 than in 1918, according to incomplete returns received by the Forest Service, United States Department of Agriculture. The estimate is based upon a comparison of the output of 118 identical mills, representing about 41 per cent of the total consumption in these States. Should this percentage of increase hold true for the remaining mills, the total consumption for the past year would equal 6,180,000 cords and exceed the previous maximum of 1917 by 700,000 cords, or nearly 13 per cent.

The production of 1,553,978 tons of wood pulp reported by the 118 mills exceeded the 1918 production by 17.5 per cent and indicated a 1920 output of approximately 3,894,000 tons, which would exceed the 1917 record production by 384,000 tons, or 10.9 per cent.

This is the first preliminary statement by the Forest Service in connection with the study of pulpwood consumption now being carried on in cooperation with the American Paper and Pulp Association and the Census Bureau. A summary of the mill reports received follows:

Comparison of 118 Identical Mills.

Year.	Cords of pulpwood consumed.	Tons of wood pulp produced.
1920	2,547,340	1,553,978
1919	2,302,899	1,422,902
1918	2,164,971	1,322,199
1917	5,480,075	3,509,939

The 1919 figures shown are published by courtesy of the Bureau of the Census from its 1919 statistics of the wood-pulp industry, which will be issued at an early date.

In view of the importance of reliable statistics on pulp and paper production, mills that have not reported are urged to file their 1920 schedules with the Forest Service at once.

WOOL OF OWN SHEEP GIVES CLOTH TO EASTERN FARMERS

Starting with the object of providing Vice President Coolidge with wearing apparel of native wool, a Massachusetts farm bureau now plans to have the entire clip of wool owned by the association manufactured into cloth and sold locally.

After the national election, the farm bureau in Berkshire County, which had pooled its wool clip and had stored it with a cooperative association, arranged with a local woolen manufacturer to have some of the selected wool woven into cloth. A tailor in the county made an overcoat for the Vice President from it.

The Franklin County Farm Bureau, not to be outdone in a matter of this sort, arranged to have made from selected wool a piece of cloth which was afterwards made into a suit of clothes, and presented to Mr. Coolidge. This bit of enterprise on the part of the Franklin County people suggested the idea of manufacturing all of the wool in their pool into cloth and selling it locally to farmers or others who might be interested, which would result in all wool growers getting a fair price for their wool, and the local people having the satisfaction of wearing clothing made from virgin wool from their own sheep. Farm bureau officials regard this as a possible solution of handling at least a part of the wool clip held in the various county and State pools, especially in New England where the grower is so accessible to the woolen factories.

URGES TENNESSEE TO PROTECT ITS FORESTS BY FIRE PATROL

That the Tennessee Forestry Association give strong support to the proposed bill providing for protection of the State's woodlands against fire was urged at a recent meeting of the association in Knoxville, by J. G. Peters, of the Forest Service, United States Department of Agriculture.

"Private owners of forest land," he said, "should be required to share in the cost of protection, which would also be shared by the Federal Government, if the State, by enacting the law, was prepared to accept its cooperation and financial aid.

"The forests of Tennessee," Mr. Peters told the members of the association, "are one of your most valuable resources. They have produced untold wealth and they have in the past aided very materially in preserving the even flow of your rivers. But their depletion has progressed at such a rate as seriously to interfere with the State's welfare."

He held that the State should establish, under direction of the State forester, a system of forest fire protection in order to keep out fires not only on the waste lands, but especially on the 5,200,000 acres of unmerchantable second growth.

58,800 ACRES PURCHASED FOR EASTERN NATIONAL FORESTS

The National Forest Reservation Commission at a meeting held February 25 approved the purchase of 58,853 acres in the White Mountains, Southern Appalachians, and Arkansas at an average price of $4.70. These lands consist of 2 tracts, amounting to 410 acres, in New Hampshire; 3 tracts, aggregating 969 acres, in Tucker and Hardy Counties, West Virginia; 14 tracts, totaling 38,056 acres, in Augusta, Rockingham, Shenandoah, Rockbridge, and Amherst Counties, Virginia; 3 tracts, with a combined area of 8,745 acres, in Johnson, Unicoi, and Green Counties, Tennessee; 11 tracts, amounting to 387 acres, on the Boone and Mount Mitchell purchase units, in Avery, Caldwell, Burke, and McDowell Counties, North Carolina; 5 tracts, totaling 698 acres, in Rabun County, Georgia; 45 tracts, aggregating 6,283 acres, largely in Montgomery, Polk, Scott, Yell, Pope, Stone, Newton, and Johnson Counties, Arkansas; and 19 tracts in Lawrence and Winston Counties, Alabama, having a toal area of 3,305 acres.

THESE GEESE WERE COSTLY.

That it is becoming a serious matter to violate the Federal migratory bird treaty act is evidenced by the fact that a violator in New Jersey was fined $200 recently and sentenced to 10 days in jail for killing wild geese after the close of the Federal open season. The geese were killed during the latter part of February, whereas January 31 is the last day that the Federal law permits the hunting of migratory wild fowl, including ducks and geese, anywhere in the United States.

WELL-BRED ANIMALS PAY BEST.

"Animals that will grow when well fed are the ones that help the bank account. I have a small dairy, and I find it pays to get the best animals for breeding or production. I am very glad to see the United States Department of Agriculture help the farmers and stockmen to weed out the runts, and get better sires and have profitable live stock."—Letter to the department from a North Carolina live-stock owner.

EFFECT OF DEPRESSION ON FARMER NOT UNDERSTOOD

(*Continued from page 1.*)

really is. They point to the high value of our land, to the high prices at which farm products were selling prior to this heavy drop, to the large number of automobiles owned by farmers, to the apparent wealth and comfort on every side, and they refuse to take seriously what the farmers say concerning their troubles.

"There are two causes for this widespread agricultural depression. One is the high cost of production last year. If we include all the factors which properly enter into the cost of production we find, for example, that the cost of producing a bushel of corn in Iowa, the greatest corn State, was more than 90 cents. This includes the land cost, the labor cost, and everything else which ought to be included.

"Many people say, 'You are figuring the land at an inflated price. You should not do that. The farmer did not pay that price for the land. He wants dividends on water.'

"It is true that the land charge is considered on the basis of its value a year ago, but it is also true that the advance in land prices was not nearly as great as many people suppose. They hear of the occasional sales at $400 or $500 an acre and assume that that represents the average. Nothing of the sort. The average advance in the value of our rich corn-belt land was only about 60 per cent above prewar values. It must be remembered also that in the principal corn States over half the land is farmed by tenants, and these tenants mostly had to pay rent on the basis of the advanced land values. It is true, further, that if we omit the land charge altogether the price which the farmer can get for a bushel of corn is still considerably below what it cost him to produce it. The largest item of cost in corn production is not land, but labor.

Some Have Prospered.

"The man who has been farming his own land and who has saved his money has prospered. The five years prior to 1920 were profitable years, especially to the grain farmer who was so fortunate as to have good crops. If he exercised ordinary intelligence, he made more money than he ever before made at farming. Those years were not so profitable to the live-stock farmer. The man who grew his own live stock and own grain and fed his grain to the live stock, on the whole, made money, although not as much as if he had sold the grain instead of feeding it. The man who bought the live stock and bought the grain and fed the grain to the live stock, on the average, lost money. When hogs were selling at $20 per hundredweight everybody seemed to think the hog feeder was growing rich, but most of the time when hogs were selling at those high figures the men who had to buy the grain to feed the hogs lost money.

Price Drop Disproportionate.

"The second cause of the farmer's trouble is this: Prices of farm products have dropped out of all proportion to the prices of other things, as well as out of all proportion to the cost of production.

"For example, the price of corn and oats to-day on the Iowa farm is about 20 per cent below the normal price of these crops before the war. The present price of fat cattle and of hogs is from 20 to 25 per cent above the prewar normal, if we take Chicago prices, but on the farm the prices of both cattle and hogs are down to prewar normal.

"Now, note the prices of some of the things the farmer must buy: Wages of farm hands are about 100 per cent above the prewar normal, railroad rates are from 70 to 90 per cent above prewar normal, such basic commodities as pig iron, coke, petroleum, lumber, Portland cement, are far above the prewar normal—from 100 to 150, and in some cases, 200 per cent above the prewar normal. Factory wages and railroad wages are both more than 100 per cent above the prewar normal.

"In other words, while the farmer is selling the things he produces at prices no higher, and for great surplus crops, lower than the prewar normal, he must buy practically everything he needs at prices from 50 to 150 per cent above the prewar normal. The severe agricultural depression is inevitable as long as such a condition exists, and this depression will certainly be communicated to industry and business generally.

"It is a situation which should challenge the very best thought of the entire Nation. If it continues, the trouble will be communicated to everyone. We are brothers one of another. Anything which hurts the farmer will very soon be communicated to all of our citizens. The farmers represent probably 35 to 40 per cent of the population. Anything which seriously affects their buying power will bring trouble to the people who make or deal in the things the farmer buys.

"It is a terrible indictment of our modern civilization when this great country is in the period of what almost might be called economic chaos because of our great surplus food supply, while across the seas in both directions almost half the world is suffering from want of food. If our statesmen had given more thought to getting the world back on a sound economic basis and, perhaps, had spent less time on idealistic schemes and theories, they would have rendered a greater contribution to the peace and orderliness and happiness of the people of the earth.

Must Find Outlet for Surplus.

"Now, as to this present situation, surely the duty of the Department of Agriculture is evident. We should do everything possible to find an outlet for this great food surplus. We should search for ways to produce more cheaply. Our scientific men should try to find new uses for our surplus crops. We should help develop more efficient marketing systems, straightening curves and lowering the grades between the producer and the consumer. It is a time for every man who can help to take hold. As in the days when we dragged our fire engines by hand to the scene of the fire and every good citizen rushed out and took hold of the long rope and did his bit, so we must do now. Every good citizen, no matter in what business he may be engaged, should do what he can to help the farmers through this period of depression, not for the sake of helping the farmer alone but for the sake of helping himself.

"We can not hope to reach normal conditions until we arrive on a price level which will be fair to all our people and all products. Farm products must come up in price and other products come down until the normal relation between them has been restored. This talk of bringing prices, whether farm prices or other prices, back to the prewar normal is morally wrong and economically impossible. We incurred a heavy national debt on the inflated prices. If we could force all prices back to the prewar normal—which we can not—it would be equivalent to just about doubling that debt. We can pay off our debts much easier if we maintain a price level more nearly the level at which the debts were incurred. Of course, the excessively high prices which prevailed during the war can not continue, but if we should try to bring about a level, say 70 per cent above the prewar normal, everybody would be better off.

"We will get through this period. The Nation is not going bankrupt. The farmers are not going bankrupt. Neither are they going to lie down on their job. Gradually farm prices will be brought into fair relation with other prices and we will go ahead hitting on all cylinders. But there is another thing in the long run—a more important phase of our agricultural problem which we have been slow in considering. Let me sketch briefly the development of our agriculture.

Farmers Often Produce at Loss.

"The farmers of the United States during the past 70 years have, on the average, produced and sold grains and

live stock at less than the cost of production if we take into consideration all the factors which properly enter into production costs. What I mean is that if the farmer would practice a sound system of business economy, charging a fair interest on the capital invested, both in his farm and his farm equipment, a fair wage for the actual labor expended on the farm against his receipts from the marketing of his crops, it will be found that he has not received for them enough to cover his actual costs. We will omit the value of the fertility of his soil, which is, in effect, a portion of his capital and which he has marketed in his crops, but which we will simply throw in for good measure, although this must be replaced if crop production is to be maintained. I know that when a statement of this kind is made many people question it. They think of individual farmers whom they have known and who have become very well to do, but I am speaking of the average farmer, the farmers as a mass, and the statement I have just made is an absolutely truthful statement which has been abundantly corroborated by scientific investigation.

"The farmers have been able and willing to sell their crops at less than the actual cost of production because, first, they have been willing to accept the value of the farm as a home, as a place to raise their children, as a part of the substantial reward for their work; and second, because as our population has increased there has been a steady increase in the value of the farm land. In times past, therefore, the young farmer who could get enough ahead to make a very small payment on a piece of land—enough to give him a foothold—and who had a lot of hard work in him, and who had a good wife, as most of them have, has been able, by living very economically, denying himself and his wife the luxuries and many of the comforts of life, to hang on, paying out on the farm, and finally to see it growing into a valuable piece of property.

"During all this period we have been a great surplus food producing Nation. We have grown more food than our own people could consume. As a result we have had to compete with the farmers of the world in the great consuming markets and take prices fixed by that competition. Another result of this great surplus of food was to stimulate our industrial development and to build up our commercial enterprises of all kinds, until now more than one-half of all our people live in the cities and industrial centers.

Consumption Overtakes Production.

"The steady increase in the value of our land and the relatively low prices for farm products has caused a constant drift of young farmers to the towns and cities, where they thought they could secure better pay for their labor and could see better opportunities to advance themselves in a material way. In some of our heaviest producing States there are not as many people on the farms today as there were 30 or 40 years ago. This movement from the farm to the city has been a perfectly natural movement and fully justified by conditions. It will continue as long as the cities offer greater financial rewards, greater opportunities for advancement, more comfortable living conditions, and better social, educational, and religious privileges. It is the inevitable result of economic conditions, and no amount of talk extolling the beauty of farm life can stop it. Nor has this relative decline in the producing population been a very serious matter up to the present time. Certainly it has not been serious from the farmers' viewpoint. We have made great advances in methods of production. The development of labor-saving machinery has enabled us to increase our production per man. Notwithstanding our increase in total population and the decrease in farm population, we have until very recently steadily increased food production per thousand of total population. This increase has come both from the use of labor-saving machinery and from bringing into cultivation new areas of fertile land. We can not keep up this gait in the future. Consumption has almost overtaken production under normal world conditions.

Reclamation Depends on Prices.

"Most of our fertile land which can be farmed profitably without expensive reclamation has been taken up. We still have large areas of swamp land and dry land and cut-over land, but these lands can not be profitably reclaimed and farmed unless we can depend upon higher relative prices for farm products than prevailed before the war. So, also, we can greatly increase the productive power of a large area of the land in surplus producing States, provided we can depend upon prices which will cover the increased expense. Under our system of farming we have produced far more per man than almost any other nation, but we have not produced nearly as much per acre as in the nations of western Europe, for example. Our greatest increase of food production in the future must come from increasing our acre yields, but this, in turn, depends upon prices which will justify the increased cost.

"The farmer is the one man engaged in a big business who has had no voice in fixing the price of the things he produces. He has been compelled to take whatever prices he could get. His cost of production has not at any time been considered in determining this price. In times of small crops prices have sometimes been high. In times of large crops prices frequently have been ruinously low. Very large crops, as a rule, give the farmer fewer dollars than small crops. Farming seems to be one business in which large production is always penalized.

"No doubt when we get through this period of world readjustment and get squared away on an orderly basis there will be a gradual increase in the value of farm land, provided our national policy is fair to agriculture, but this increase will be much slower than in times past. The speculative value has been taken out of the land. The farmer can no longer depend upon the increase in the value of his farm to make good losses suffered through his farming operations year by year. Farmers' crops must sell higher relatively in the future than in the past.

Fertility Nation's Greatest Asset.

"We seem to have been going on the theory that the fertility of our soil, especially in the great corn and tame grass country, is inexhaustible. To the Nation this is a most dangerous theory. We must set about in earnest the development of an agricultural policy which will enable us to feed our people at fair prices and at the same time retain the fertility of our soil, our greatest national material asset.

"The increase in tenancy has aroused great concern. Many people seem to think that tenancy is in itself an evil. Not necessarily so. As land advances tenancy increases. This has always been true everywhere, and it is not necessarily a bad thing in itself. The farmer who has a limited working capital can far better afford to rent than to own after the land has reached a fairly stable value based on its productive power. Men are willing to invest their money in land and accept a very low rate of interest because of the security of the investment, but there are evils which grow out of the tenancy system which must be corrected.

"If we are to make this a self-sustaining Nation agriculturally, as President Harding put it in one of his speeches, there is no time to be lost in studying these great problems. It is not a question of production alone; it is a question of the farmer being able to sell what he produces at a price which will justify him in continuing to produce. We are the best producers in the world, but our sales system is very bad, indeed. We must study everything which influences both production and price. We must look into the matter of competition from farm-

ers of foreign lands, where the agriculture is still being exploited and where the standards of living are very much below the standards which we demand for our people. We must look into world conditions, both of supply and demand, and produce more intelligently and adjust our various crops to the probable needs. We must look into the administration of our credit machinery. Those who control the finances of the country and who have in their power to influence, either directly or indirectly, the extension of credit can exercise a large amount of control over the prices of farm products. The same thing is true of the administration of our transportation systems. Through the simple device of regulating the flow of cars the prices of farm products can be sent up or down at the will of those who exercise such control. We had some costly experiences along this line during the war.

"In short, the people of the Nation must come to understand that our prosperity as a Nation depends upon a prosperous and wholesome agriculture.

"I can not now speak in detail of the many lines of work in the Department of Agriculture. We have here a magnificent body of men and a splendid organization. We are going to try to use the scientific and practical knowledge of these men wherever it can best be used to promote the agriculture of the Nation."

KEEP CORN AND POTATOES OFF WHITE-GRUB INFESTED LAND

Severe injury from white grubs is to be expected this season throughout southern New York, northern Pennsylvania, northern Ohio, the southern half of Michigan, northern Indiana and Illinois, eastern Iowa, and southern Wisconsin. Every three years these regions are visited with outbreaks of this pest, because of the fact that it takes three years for the insects to pass through their complete life cycle. There will be an abundance of small grubs this year of what is known to entomologists as "Brood A" of the white grub. They will occur especially in fields that were in grass last year, and for this reason throughout the regions mentioned neither corn nor potatoes should be planted on such land, because these crops will almost surely be severely injured if this be done. Ground that was in pure clover or even in corn last year is likely to be quite safe for planting to corn this year, because the beetles which are the parents of the white grubs do not usually lay their eggs in such crops. A good rotation of crops to escape white-grub injury is as follows: First year, oats or barley; second year, clover; third year, corn. Timothy or other grasses harbor white grubs from year to year, and therefore, in case they are grown, the land producing them should not be planted to corn, at least for the first year after it is broken from the sod.

Farmers' Bulletin 940 contains full information on white grubs, and may be obtained free on application to the United States Department of Agriculture.

CENSUS SHOWS MANY FARMS HAVE PUREBRED LIVE STOCK

(*Continued from page 3.*)

recent years, department specialists expressed some surprise at the large number of purebreds, especially in Indiana, Ohio, Michigan, Oklahoma, and Massachusetts. In all of these States more than 10 per cent of farms report some kind of purebred animals.

Purebred-Sire Totals Are of Interest.

For horses, beef cattle, and dairy cattle the number of purebred males and females were enumerated separately; with sheep and swine both sexes were counted together. An impressive total of purebred bulls is shown even this early in the count. Purebred Holstein bulls reported number 19,135; Jerseys are second, with 7,896 bulls. Among beef cattle Shorthorn bulls are most numerous, numbering 23,663. Hereford bulls are second, with a count of 10,864.

The figures for other States are expected to be available the latter part of the summer. It is expected also that results by counties will be available for all States, a matter of lively interest to local breed associations and to county agents.

STALLIONS ARE TRANSFERRED TO WAR DEPARTMENT

The United States Morgan Horse Farm, conducted by the United States Department of Agriculture at Middlebury, Vt., recently turned over to the War Department four of its young registered Morgan stallions for use in connection with the remount breeding work which that department plans to conduct on a large scale throughout the country.

These stallions were: Linsley 7233, a three-year-old chestnut stallion by General Gates 666, and out of Sunflower Maid, by Headlight Morgan 4683; Melvin 7231, chestnut, a two-year-old by Scotland 6000, and out of Sunflower Maid; Magistrate 7232, chestnut, a two-year-old by Sealskin 6500, and out of Folly, by Bennington 5693; and Mandarin 7239, black, a two-year-old by Jerome Morgan 4618, and out of Dewdrop, by General Gates 666.

They were shipped from the Government farm at Middlebury, Vt., Friday, February 4, for Kansas City, Mo., from which point they will be distributed later to several breeding centers.

These young stallions are all high-class individuals of excellent blood lines, and are expected to make a satisfactory showing for themselves and the Morgan breed by their record in the remount work.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended March 5, 1921:

The Farm Kitchen as a Workshop. Farmers' Bulletin 607.

Roses for the Home. Farmers' Bulletin 750 (revised edition).

Goose Raising. Farmers' Bulletin 767.

Hog Cholera. Farmers' Bulletin 834.

Unit Requirements for Producing Market Milk in Vermont. Department Bulletin No. 923.

A Brachytic Variation in Maize. (Professional Paper.) Department Bulletin No. 925.

Corn-Belt Farmers' Experience With Motor Trucks: A Study of 831 Reports from Farmers Who Own Motor Trucks. Department Bulletin No. 931.

Comparative Spinning Tests of Meade and Sea Island Cottons. (Professional Paper.) Department Bulletin No. 946.

Nicotine Sulphate in a Dust Carrier Against Truck-Crop Insects. Department Circular 154.

Peppers. Department Circular 160.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 607; Department Bulletin No. 923; Department Circular 154.

Cooperative shipping of cotton seed, and selling of cotton through an association organized by the State extension service, proved a financial boon to the farmers of Lafayette County, Miss. Two cars of cotton seed were listed for shipment and were sold at $25 a ton, f. o. b. the nearest railway shipping point. The local price for cotton seed was $18 a ton, the same that it had been for two months. About 450 bales of cotton were classed by the Government classer, and sold at an advance on local prices.

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Weekly News Letter

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ONCE MORE THE HESSIAN FLY APPEARS IN GROWING WHEAT

Continued Work Will be Needed to Protect the Planting Next Fall from the Insect.

The Main Crop in Kansas Is Comparatively Fly-Free Due to State and Federal Control Campaigns—How and When to Operate.

The Hessian fly is dangerously abundant throughout much of the winter-wheat belt at present. Only the greatest effort continued throughout the approaching spring, summer, and early fall will prevent a great outbreak from starting in the wheat to be planted next fall.

The peculiar and unusual weather conditions prevailing in much of the winter-wheat belt last summer and fall are believed to have been largely responsible for the present abundance of the pest in some parts of the country. Conditions east of the Appalachian Mountains seem to be most threatening. Heavy infestation is present on the eastern shore of Maryland and Delaware, and in the counties in Maryland and Pennsylvania bordering the interstate line. Infestation in these counties is more general and heavier than has been the case for many years.

Fly-Free Date for Sowing.

The pest is present in menacing numbers in some sections of Indiana, although it is believed the campaign conducted last fall by State and Federal forces to induce the sowing of fall wheat at the normal safe date will result in reducing very materially the damage to the present crop. For the East-Central States as a whole, the infestation of Hessian fly in the young wheat as determined last November was less than one-fourth as great as in the fall of 1919.

In Michigan the infestation of the fly is much heavier as a result, perhaps, of the lack of participation of this State in the concerted campaign conducted in Ohio, Indiana, and Illinois against the pest by State and Federal men during the last year. The response of the growers in this region was almost unanimous, and had it not been for the occurrence of an abnormally late wave of the Hessian fly (a very rare thing) there is little doubt that these States would have been practically free from the insect at this time.

The present outlook in Missouri is for heavy damage by the Hessian fly to early sown wheat, especially in St. Louis and Jefferson Counties. Very many growers, however, have followed the advice of State and Federal experts in planting at the safe date, and will have good yields despite the general heavy infestation. In Kansas, while the main crop is comparatively free from infestation, much of the volunteer wheat in several important wheat-producing counties is rather heavily infested. The good condition of the main crop is ascribed to the efficient control campaigns waged by State and Federal forces for some years past. In Kingman, Pratt, and Summer Counties sufficient infestation is present in the volunteer grain to serve as a menace to the crop in case conditions should remain favorable for multiplication of the fly in the spring. Infestation recently has been reported from Barton County, through the Bureau of Crop Estimates, although

Continued on page 8.

HOW TO FAIL IN A DAIRY.

Sometimes the best way to show how to do a thing is to tell how it should not be done. Then the way to succeed will be clearly evident. With this plan in view a West Virginia farmer gives some rules on how not to succeed with cows, a copy of which has just been received by the United States Department of Agriculture. The farmer-humorist says:

Don't weigh your milk, for then you might have to figure and think.

Feed the cows timothy hay—it is good for race horses.

Cow-testing associations are needless—they show how to save and know.

Keep the barn hot—cows are like woodchucks.

Don't have many windows in the barn—the hired man might look out.

Keep water ice cold—shivering gives the cows exercise.

Avoid heavy milkers—they consume too much valuable time.

GOVERNMENT LOANS TO FARMERS IN DROUGHT-STRICKEN AREAS

Starting Organization to Buy Seed Was First Official Act of Secretary Wallace.

Western North Dakota and Montana Farmers Have Special Need for Assistance, Because Drought Ruined Their Crops Last Year.

The first official act of Secretary of Agriculture Wallace was to take up the consideration of making loans to farmers in drought-stricken areas for the purchase of seed, for which purpose Congress recently appropriated $2,000,000. The law states that the Secretary of Agriculture is authorized, for the crop of 1921, to make advances or loans to farmers in drought-stricken areas in the United States where he finds that special need for such assistance exists for the purchase of wheat, oats, barley, and flaxseed for seed purposes.

Farmers in Urgent Need.

It has been found that there is a need for such loans to farmers in western North Dakota and parts of Montana, where there was serious drought last year. Farmers in those areas are reported to be in urgent need of seed for spring planting, and plans are being made with the least possible delay by Secretary Wallace to provide such farmers with money at a low rate of interest for the purchase of grain and flaxseed.

Leon M. Estabrook, Chief of the Bureau of Crop Estimates, has been designated by the Secretary to have general supervision of the organization to make the loans, and C. W. Warburton, of the Bureau of Plant Industry, has been put in charge of the field organization. These men were in charge of the seed-grain loans in the fall of 1918 and spring of 1919, which were made available by a special fund allotted for the purpose by the President. The Secretary has also appointed an advisory committee, of which Mr. Estabrook is chairman, and of which the following are members: Dr. W. A. Taylor, Chief of the Bureau of Plant Industry; R. W. Williams,

Solicitor; A. Zappone, Chief of the Disbursing Office; and Dr. C. B. Smith, in charge of extension work in the Northern and Western States.

Headquarters at Fargo.

Mr. Warburton will establish headquarters at Fargo, N. Dak., and will issue information and instructions to extension leaders, county agents, and other officials who will cooperate in placing the loans. The department will be represented in every county by the county agent, and either the county agent or some other representative of the Government who is familiar with local conditions will pass upon each application for loan. The law authorizing the loans states that the Government is to take a first lien on the crop to be produced from the seed obtained through the loan, and that the Secretary of Agriculture may in his discretion deem this sufficient security.

Every effort will be made by department officials to have the necessary organization for making loans in operation well in advance of the planting season.

INSPECTION SERVICE ASSISTS IN ADJUSTMENT OF CLAIMS

Claim agents of public carriers are quick to see the advantage of impartial inspection at shipping points and at the terminal stations. Many claims for damage to shipments of fruit and vegetables are sent into the transportation offices with little or no data to substantiate the statements. The carriers are loath to make an adjustment unless the evidence is sufficient to show that the shipment was received in good condition and that the damage was really caused in transit. Delay in settling claims invokes the ill feeling of the shipper against the carrier and many misunderstandings and costly litigation are the inevitable results.

In some States—California, for instance—the State department of agriculture maintains inspection service at the principal shipping points, and this, with the Federal inspection by the Bureau of Markets, United States Department of Agriculture, at the terminal markets, furnishes facts which are necessary to secure adjustments of claims which are fair to both shipper and carrier. When a claim for damages to a shipment is accompanied by a certificate of inspection, which shows that a competent and impartial observer checked the load into the car in good condition, and the statement of a second inspector indicating that the shipment arrived at the terminal in poor condition, the claim agent has definite evidence that the claim is just, and an immediate and satisfactory adjustment can be made.

CONTROLLING CORN-ROOT ROT BY CAREFUL SEED SELECTION

Losses from Planting Diseased Seed Are Greater Than Generally Realized.

Utility Corn Show at Galesburg, Ill., Demonstrates Value of Germination Test and Superiority of Smooth, High-Yielding Over Rough Show Types.

"The investigations of the Department of Agriculture on corn-root rots are by far the most important work on corn that has been done in the last 20 years," was the remark of a prominent corn-belt agronomist after studying the corn-root rot exhibit made by the department at the International Grain and Hay Show at Chicago in December. Begun as a simple pathologic problem, the study of the root, stalk, and ear rots of corn soon developed into a complex study involving many phases. The losses from these rots are widespread and are very much heavier than is generally realized. Conservative estimates place the annual loss at from 2 to 10 per cent of the crop in various sections of the corn belt, and on badly infested fields the loss is often much more than 10 per cent.

Select Sound Healthy Seed.

The most effective means of controlling corn-root rot yet known lies in selecting disease-free seed corn. Not only should the right type of ears be selected from healthy stalks in the field, but the corn should be cured promptly, and should be tested for germination by special methods to make sure that apparently healthy ears are not actually diseased. The germination test approved by the department scientists who are investigating corn-root rot is made with a special type of rag-roll germinator devised in cooperation with the Indiana Agricultural Experiment Station and the Funk Bros. Seed Co. This germinator is discussed, and other methods for the control of the disease are outlined, in Farmers' Bulletin 1176.

A demonstration of the value of these investigations was made recently in the Utility Corn Show, held at Galesburg, Ill., January 5 and 6. One of the chief requirements of prize-winning ears was that they should be practically free from disease in order to win high rank. To determine freedom from disease, all entries were subject to the results of a germination test made by the improved methods mentioned in the foregoing. In the judgment of a number of prominent corn men an important milestone was passed in the development of better corn through the holding of a corn show with such requirements.

Types of corn most likely to be free from disease have been determined in the course of these investigations. To give these characteristics and the results of the germination tests their proper place in determining the value of seed corn, a special score card was prepared with the various points weighted and interpreted, as follows:

General appearance.....per cent.. 45
Indentation.....do.. 5
Ears with a distinctly rough indentation are frequently imperfectly matured owing to the presence of disease. Very rough indentation is objectionable, and will be discriminated against.
Kernel composition.....per cent.. 5
Starchy seed ears produce many diseased plants which give unsatisfactory yields.
Shank attachments.....per cent.. 10
Many ears which have the pink, slightly pink, brown, or shredded shank attachments were produced on diseased stalks. Frequently such ears may have an otherwise good appearance, but whenever any of the symptoms described are found the ear should be discarded. (NOTE.—All ears must have the shank attachments intact just as the ear was broken from the shank. Any effort to trim out or alter the shank appearance will eliminate the sample from competition. This does not apply to ears which were stored on hangers.)
Tips of ears.....per cent.. 5
The tips of the ears should be bright and free from "weathering" or discoloration of any kind.
Luster, or polish.....per cent.. 10
Ears having a bright, rather oily appearance have proved themselves superior as seed ears. This appearance indicates a normal healthy development and complete maturity, and is associated with greater vigor. Such ears possess higher yielding qualities than ears which are rather dull, dead, or dry looking which have no luster.
Kernel characteristics..per cent.. 10
Kernels from normally matured, healthy ears are nearly always thick, plump, bright, and clean, and possess well-developed germs. Such kernels usually have distinctly horny endosperm. A moldy or discolored condition of the kernels near the point of attachment to the cob indicates disease.
Germination record.....per cent.. 35
Vitality and vigor.....do.. 20
The seedlings in the germination test should show thick, sturdy sprouts, and good root development. Tall, slender, weak seedlings and those having short, slender feeder roots are not desirable.
Freedom from disease symptoms per cent.. 15
Type and uniformity.....per cent.. 20
All ears in a sample should be uniform. The chief points considered here are shape and size of ear and uniformity of kernel. These vary with the variety and section of the State where the corn was grown.

Field Tests Show Value of Proper Selection.

The importance and the interpretation of these various points, from the stand-

point of production, is based on experimental evidence accumulated in the course of the investigations. It is significant that two samples of corn which stood high in the winnings at the International Grain and Hay Show at Chicago failed to place at the Galesburg Utility Show, while sweepstakes at the Galesburg show went to a sample which was entered but failed to place at the International. A second prize exhibit at Galesburg stood thirty-ninth in its class at the Chicago show.

The whole program was well arranged and the show proved to be a marked success in many ways. It was sponsored jointly by E. M. D. Bracker, farm adviser Knox County Farm Bureau; Dr. W. L. Burlison and Prof. J. C. Hackleman, University of Illinois; and Harvey J. Sconce, Eugene D. Funk, and other members of the Illinois Corn Breeders' Association, with the cooperation of the Office of Cereal Investigations, Bureau of Plant Industry, United States Department of Agriculture, through J. R. Holbert, who is stationed at Bloomington, Ill., in connection with investigations of the root, stalk, and ear-rot disease of corn.

A large number of entries were made from all parts of Illinois, 24 counties being represented. In all 2,000 ears of corn were shown. It was almost literally true that those who "came to scoff remained to pray," so convincing was the evidence in favor of the utility type of corn as against the rough "show" type. The smoother, higher-yielding types attracted much interest. In them it was recognized lay wonderful possibilities for corn improvement.

At the close of the show a silver loving cup was given to the representative of the department, J. R. Holbert, by the Illinois Corn Breeders' Association, in appreciation of his efforts toward corn improvement.

SOY BEAN MAKES ITS WAY NORTH TO COLDER CLIMES

The soy bean, an Asiatic importation, popularly associated with the South, is making its way north, and, according to reports received by the United States Department of Agriculture, is being well received.

Most of the varieties first brought to this country were from parts of Asia, whose climate corresponded more nearly to the Southern States. Within the last seven or eight years the department has obtained about 300 introductions of soy beans from Manchuria, Korea, and Japan, some of which grew as far north as the fifty-second parallel. The most promising northern varieties are the Black Eyebrow, the Mandarin, and the Manchu, all native to a latitude of about 46 degrees, on account of which they are adapted to our most northern States. A large number of samples of Black Eyebrow soy bean were sent to northern farmers last year, and out of 551 reports returned more than 400 were favorable. Reports promise a great increase in acreage in Northern States this year. Seedsmen are laying in supplies of these more northern varieties; but many farmers, if unable to obtain northern seed, will plant old varieties, such as Ito San. From 90 to 95 per cent of soy beans are raised for hay, silage, and pasture, although they are prolific seed producers.

Farmer Sets Example in Better Dairying Methods by Building Improved Milk House

The endless-chain manner in which agricultural extension works for the betterment of a community is shown in the monthly report of the western office of the Dairy Division, United States Department of Agriculture. A representative of the western office visited a creamery in Washington State early in July and talked to dairymen as they unloaded their cream. One man seemed to be particularly interested when the representative told him about the need of better cream, how such cream could be had by better care in cooling, and how a cooling tank could be built. The dairyman asked the representative to visit his farm.

Official Suggests Needed Changes.

"I went out to his place," the dairy representative writes in his report, "with some Department of Agriculture bulletins relating to the building of milk houses and the cooling of cream on the farm. I explained how he could equip the house with water connection for a cooling tank and how to make some changes to suit his needs.

"The county agent was interested in this line of work and asked what he could do toward carrying it forward. I said: 'Mr. L. will have a milk house and cooling tank built in three weeks. If convenient, call on him then, and take a farmer along. Repeat the visit and take other men along to see his milk house. If this man sees his work is so appreciated that people will come distances to see it, he will become a booster for milk houses and cooling tanks and convert his neighbors to his point of view quicker than you or I can do it. I remember a farmer in Minnesota whom I used to hold up as a conspicuous example of the model dairyman when I spoke at dairymen's meetings. I think he would rather have lost his best cow than to have me see him deliver a can of sour or off-flavored cream to the creamery. He had acquired a reputation and took a glorious pride in living up to it.'

"Again, in December we visited Mr. L. He had done more than I expected. He had built a substantial cement-bottomed milk house with large cement cooling tank; installed a milking machine and electric power for the milking machine and the separator; and had a carrier system so the milk cans were carried on an overhead rail from the stable to the milk house across the road, and the cream, after being skimmed, could be hoisted easily into the cooling tank. Mr. L. considered it a good investment and quite a labor-saving device."

CORN FOR THE STARVING.

Fifty million bushels of corn will be the gift of American farmers to the starving millions in Central Europe, China, and the Near East. The grain is a free-will offering made by the members of the American Farm Bureau Federation, according to a report which has reached the United States Department of Agriculture.

The action is characterized as a most generous example of practical charity. The farmer members will furnish the corn; the railway brotherhoods declare they will provide engine and train crews free of charge; and it is expected that the railroads will offer free cars for the gift.

Mr. Hoover has accepted the offer.

HIGH SILLS CAUSE OF LOST PIGS.

Many pigs are lost and others are stunted in growth as the result of exposure because of high sills in front of hogpens. This is the observation of a Nebraska swine grower in a letter to the United States Department of Agriculture on the cause of runty live stock. He urges that stockmen examine their equipment, and be certain that small pigs are able to follow the sows into the pens. Attention to balanced rations, sanitation, and pure water are likewise mentioned as methods of preventing runts.

Weekly News Letter

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UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS
John L. Cobbs, Jr., Chief

PRESS SERVICE
Dixon Merritt, Assistant in Charge

The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

STATES USE SUGGESTED LAW AS GUIDE TO MARKETING

Four States have made use of the suggested law on cooperative marketing of farm products prepared by the Bureau of Markets, United States Department of Agriculture, as a guide in the enactment of cooperative legislation. The department conducted investigations of cooperative organization problems in 40 States, last year, and gave assistance to purchasers in marketing grain, live stock, dairy products, fruit, vegetables, wool, cotton, tobacco, nuts, honey, and other products.

In addition to this assistance advisory aid was given in formulating plans for a national federation of live stock shipping associations, a similar State association, and a State federation of farmers' elevators.

Conferences were held with secretaries of State farmers' grain dealers' associations. As a result a suggested set of by-laws for cooperative grain elevator companies was prepared.

BETTER CONTAINERS NEEDED FOR PERISHABLE SHIPMENTS

Perishable products worth millions of dollars are destroyed annually on account of breakage in transit of the containers in which they are packed. More than one railroad has appealed to the Bureau of Markets, United States Department of Agriculture, to help to remedy this situation, a high official of a southern railroad stating recently that in his opinion shippers should be compelled to use containers of adequate strength, and that proper car-loading methods should be exercised.

It is vastly to the interests of the shipper to use containers of a strength that will carry perishable products safely to market, and the Bureau of Markets has made many investigations and experiments to determine just what strength containers should be to accomplish that result. These investigations are still in progress, but the information already collected is sufficiently complete to enable the bureau to advise shippers with regard to the best containers to use in shipping specified fruits and vegetables.

MAPLE SUGAR BEING HELD IN VERMONT AND NEW YORK

Maple sugar to the amount of 1,500,000 pounds, including sirup equivalent, looks like a fabulous quantity to the average family which is fortunate to have a few pounds under lock and key, to be doled out to the children as a special favor, but this was the amount of the stocks in the hands of maple-product makers and dealers February 15, as ascertained by the Bureau of Crop Estimates, United States Department of Agriculture, and it was comparatively a small quantity, since it was only 4 per cent of the production of 1920. The sugar was 318,600 pounds and the sirup 148,600 gallons. The stocks in the hands of makers would have been smaller had they not "feared another shortage of granulated cane sugar." The holdings were mostly in Vermont and New York.

NEW WOOD-PULP INDUSTRY NOW DEVELOPING IN ALASKA

Alaska is now manufacturing wood pulp. Samples of the first "run" from a new mill near Juneau, in the Tongass National Forest, have just been received by U. S. Forest Service officials, who state that this marks another milestone of progress in pulp production for the newsprint industry.

The mill which produced this wood pulp is the first of its kind in the Territory, and is operated by hydroelectric power. It has a capacity of 20 tons of pulp a day with power resources available for increasing the output to 250 tons. While not equipped at present to turn out paper, it is the intention of the operating company to enlarge the plant so as to make a finished product. The sample received is high-grade spruce pulp, but hemlock will also be ground in quantity for newsprint purposes.

The Forest Service has tried for many years to establish a pulp mill in Alaska, but the pioneering difficulties attending such an enterprise, coupled with the prevailing low prices for pulp and paper, have prevented development of the industry. It was not until the summer of 1920 that the first mill was built. The first run of pulp was made on January 24.

"The Tongass National Forest of Alaska," said Chief Forester W. B. Greeley, "contains 70 billion feet of timber, sufficient to meet one-third of the pulp and paper requirements of the United States. There is also a tremendous amount of undeveloped water power, from which probably a quarter million horsepower could be obtained. An area containing 2 billion feet of pulp-making timber will be placed on the market soon by the Forest Service in response to inquiries from prospective paper manufacturers."

TO MAKE AGRICULTURAL DATA OF MORE PRACTICAL VALUE

To make agricultural data of greater practical value, the large volume of statistics collected by the Bureau of Crop Estimates, United States Department of Agriculture, is being summarized by statisticians of the bureau. Substantial progress has already been made in this work. The summaries interpret current estimates and afford comparisons with past years, without which current figures, however accurate, are of little practical value, statisticians say.

In the different States the problems of securing the greatest practical uniformity without suppressing the personal initiative of the agricultural statistician is made extremely difficult by the great diversity of the crops grown, the methods of handling and disposing of them, the farm practices, the dates of harvesting, and the unconscious tendencies of reporters toward bias, as well as in the amount and character of data available.

Another important step in raising the efficiency of the field service has been the standardizing of the field office filing systems, basic records, and office systems. The process of so unifying office arrangements is about 70 per cent complete, and the results, it is said, have amply justified the time and expense involved. With few exceptions the agricultural statisticians are men whose training has been along lines other than office procedure. Notwithstanding this fact, most of them now maintain their files and records according to a carefully devised plan, which makes it possible for any officer of the bureau when inspecting a field office or any statistician transferred to a new territory to have instantly at his command the essential records of the office.

HOW COUNTY AGENTS ARE HELPING FARMERS.

Little Items Showing the Growth of the Cooperative Spirit in Southern States—Ways and Means that Increase the Food Supply and Promote Family Happiness.

A York County, S. C., pig-club boy raised a pig last year that weighed, at 9 months 7 days, 443 pounds. The cost of raising was 6.7 cents a pound.

Cotton growers in Pontotoc County, Miss., obtained more than 1 cent above the local market price for their cotton by having it properly classified, and by selling it cooperatively.

A community woodsaw and gasoline engine which cost $500 was installed in Limestone County, Ala., recently, through the efforts of the Negro county agent. The boy who is operating it learned how to do so while attending the short course at Tuskegee.

One Alabama district agent, with headquarters in Lee County, reports $118,837 worth of produce and supplies handled cooperatively in his district during 1920. This was a saving to the farmers of $23,187, or an average saving of $1,783 a county in the district.

Sugar cane in Allendale County, S. C., was a worth-while crop for one demonstrator in the county. He planted 3½ acres, which produced 1,800 gallons pure sirup when harvested. This gave a total profit of $514 an acre, as the sirup sold for $1 a gallon. He is now planting 5 acres.

Jefferson County, Ala., will save about $5,000 a year in milk and butter bills by the recent purchase of a 60-cow dairy for the county farm. These cows were purchased at the suggestion of the county agent. Besides providing dairy products at cost, they will provide a means of building up the county farm very materially for the growing of truck crops.

Pulaski County, Ark., farmers are much interested this winter in learning the best ways of butchering, curing meat, and making sausage. The county agent arranged a number of demonstrations. An average of 3 beeves and 14 hogs were butchered at each demonstration. Practically all the farmers living near the farm at which a demonstration was given attended.

Hampton County, S. C., has a $100,000 stock company which functions as a marketing association by handling the farm crops of the community. The members have put in machines for handling corn and other farm crops. They also have a big potato storage house. The organization of the company and its success may be attributed largely to the advice and encouragement of the county agent.

A greater part of the citrus fruit crop of Putnam County, Fla., has been disposed of this winter through special packs which were sold to the tourists. These boxes of citrus, especially packed according to the directions of the county agent, proved popular with the northern tourists, who sent them home as Christmas presents. The farmers of the community found the plan an excellent one by which to dispose of their produce at a good price.

In Dooley County, Ga., straw was an unsalable commodity until, with the aid of the county agent, the farmers of the county found a purchaser in a firm in Atlanta. The price received was $15, f. o. b. Atlanta. This netted the farmers $10.25 a ton for something they thought was not salable. All costs were figured, including baling, labeling, and wiring, hauling, loading, and freight. Harvesting costs prior to thrashing were charged to the grain.

In Davidson County, Tenn., the county agent, eager to increase the number of water systems in the local farm homes, induced the local dealer to cut prices on small water systems. The price quoted was about one-third the regular price—a complete bathroom outfit with kitchen sink and hot-water tank for a little less than $100. The farmers' wives in Davidson County are most appreciative of this effort to make it possible for them to have such a necessary home convenience at a moderate price.

At a meeting of the Jefferson County, Alabama, Dairyman's Association the county agent made a plea for the use of purebred bulls on the farms in that section. At the close of the meeting 15 dairymen signified their desire to get registered bulls, and 10 dairymen wanted registered cows at once. Arrangements have been made also to purchase spraying machines cooperatively to whitewash the barns and outbuildings and to improve the looks of the dairy farms of the county.

A Nottoway County, Va., farmer raised 100 bushels of corn on a 5-acre field five years ago and thought it an excellent yield. Since then he has been attending corn demonstrations given by the county agent and has learned to put this knowledge into practice, with the result that in 1920 he grew 250 bushels of corn on the same 5 acres. He is now secretary of the farmers' club in his community, and at every opportunity tells the farmers how the demonstration work has helped him, and encourages them to do better on their farms.

Terracing is needed on many farms in Miller County, Ark., and terracing demonstrations given by the county agent this year have proved both helpful and popular. At a typical meeting with 16 present a drag was made and a couple of modern terraces constructed. One man living in the neighborhood has since purchased a set of instruments and two of the farmers who were present completed arrangements before the close of the meeting to assist each other in terracing their farms. Some of the older boys were taught how to handle the instruments, and a chance was given them to run terraces for themselves.

A carload of hulls and meal bought cooperatively by Hines County, Miss., farmers this winter was handled at a saving to the consumer of $9.80 a ton for the hulls and $11.80 a ton for the meal, or a combined saving of $161.85 on the car. The saving is estimated from the actual prices paid to local merchants the day the feed was delivered. In fact, one merchant that day expressed a desire to order meal with the farmers, saying they were getting it cheaper than he could buy it. This difference is due to the fact that the farmers' association bought directly from the mill, while the merchant bought through jobbers.

The winter season finds most of the county agents discussing plans for the following season with the farmers in their community. The Robertson County, Tenn., agent, after discussing the question of increased production with the majority of the farmers in his section, reports that the results of the corn-club work have had more to do with molding sentiment for better farming methods than practically any other line of work

in his county. Numbers of the farmers said that if the boys could produce certain yields, surely their fathers ought to, and they were going to try this year to see just how much they could produce.

Farmers in Lawrence County, Tenn., can attend free motion pictures any Saturday afternoon they choose this year. The Booster Club of Lawrenceburg, working with the county agent and the social welfare committee of the county council, has arranged these free pictures for the farmers. The business men of the town purchased the machine and paid the expenses incidental to the show, such as the express on reels. The reels used are obtained from the United States Department of Agriculture and the slides from the division of extension of the State agricultural college. The mayor of the town gave permission to have the pictures shown in the courthouse and donated the electricity used.

Better seed corn will be used by at least one Roanoke County, Va., farmer this year than was ever used by him before. He planted a 26-acre field last spring to corn. Twenty of the acres were planted with seed corn from his father's farm. This he thought was good enough for anyone to plant, as his father had been growing this corn for 40 years. The county agent persuaded him to plant 1 bushel of corn from an improved variety on the other 6 acres, in the same field. Both parts of the field received the same treatment. On the 20 acres which were planted with his father's seed corn he harvested 60 bushels an acre. On the 6 acres planted to the improved seed corn he gathered 75 bushels an acre.

The cooperative canning company organized by the farmers of Union County, Ga., with a prosperous year behind it, is planning even greater things for 1921. The truck owned by the company brought in more produce in 1920 than ever before, and the established truck routes will be extended this year. And as beans, berries, and sweet potatoes have been the best sellers, the directors of the company plan to increase the amount of these varieties canned and to decrease tomatoes and apples. The two latter products bring poor prices regardless of quality. The county agent's advice and suggestions were given to the promoters of the enterprise.

Despite the fact that the prices for all farm produce have slumped woefully during the last year, a Weakley County (Tenn.), farmer on a 40-acre farm sold $1,207 worth of farm produce in 1920. The owner kept a close record of all work and other expenses. Itemized, his account runs as follows: Strawberries from 1 acre, $327; 21 hogs, besides meat for home use, $380; 1 colt, $80; 5 barrels corn, $55; 1 cow $80; wool and 5 lambs, $92; one-half acre sweet potatoes, $78; chickens, eggs, and butter, $115. In addition to selling this amount, which was raised on the farm and with feed raised at home, 75 barrels of corn are now in the crib, together with a well-filled smokehouse and pantry. Only 9 acres were cultivated to corn, besides the other truck crops. The remaining part of the farm is in pasture and hay crops.

The county agent of Page County, Va., tried last summer to persuade a farmer in his territory to keep purebred hogs. The man was difficult to convince. At the time of the argument the boys' pig-club contest for the year was just starting. Despite the arguments which the county agent made in favor of purebred stock, the man went ahead and bought four scrub pigs, saying he did not think the boys' club pigs would do any better than those he had purchased. He bought his pigs a month after the club contest started, and gave them the best of attention. He butchered his hogs in January, this year, and the largest weighed 175 pounds gross. The prize winner in the pig club weighed 330 pounds, and was fed only a little over five months. This farmer is now trying to buy some purebred hogs, and declares his scrubs cost him more than twice the amount the meat they produced would have cost him.

A Seminole County (Fla.) farmer probably holds the championship of his State for cooperation with the Federal and State extension workers. He is an officer and shipper in the farmers' exchange (a cooperative marketing association); his boy belongs to a pig club, and was sent to the State agricultural college for the short course; upon information furnished by the county agent he bought draintile at a substantial saving; assisted in strengthening the State fertilizer law; purchased reliable seed from sources recommended by the county agent; sold seed corn grown and selected on his farm throughout the State; bought 10 tons of Government nitrate of soda; gave his hogs the double treatment against cholera; received refunds amounting to over $2,000 on fertilizers found short, through samples drawn by the county agent for analysis by the State chemist; and has been a demonstrator and cooperator in crops on his farm. It seems needless to add that he is a strong supporter of extension work.

A public-spirited man in Fayette County, Miss., gave 6 registered pigs to the boys' and girls' pig-club work last year, with the understanding that each one who received a pig was to give back to the club 1 pig from the first litter and 1 from the second. The donated animals were drawn for by the members from each beat and one from the county at large. The recipients were very proud of their pigs. The 6 from the first litters were distributed in December. If the plan is continued for five years it is estimated that 204 registered pigs will be given away at the close of that time, and it is hoped that purebred hogs will be found on every farm in the county. If these plans mature as is hoped, the 204 which will be available for gifts at the end of the five years will be put up at auction and the proceeds used for a scholarship to the State Agricultural and Mechanical College, which will be awarded yearly to the winner of the county pig-club championship.

The efforts of the county agent in Union County, Ga., have helped in reducing forest fires in Towns and Union Counties to less than one-tenth of 1 per cent in recent years. One tract of 60,000 acres of timber lies in these counties. In this work the forest ranger of the district has built up a cooperative patrol system, with the help of the county agent, which has rendered excellent protection against forest fires for the last five years. This work not only has been a protection to mountain forest land, both nationally and privately owned, but the benefit to the ranges helps the live-stock owners materially in preventing erosion, and has checked the vast damage done in the past to bottom lands and farms by overflowing streams. These results have been obtained despite the previously established custom of "burning the woods" twice a year. In the absence of fires, larger crops of mountain huckleberries have been grown, which the school children have found profitable to gather for the cooperative canning factory, and the hogs find the land better range. The local residents have cooperated most faithfully in this work.

BEST LIVE STOCK IS CHEAPEST.

"From 30 years' experience in breeding thoroughbred horses and later dairy cattle, I have found that the best is the cheapest." This is the opinion of a Virginia farmer in a statement to the United States Department of Agriculture. "I think all raisers of live stock in Virginia are aiming to procure purebred sires."

Adjust Production to Market Demands, Farm Management Chief Tells Farmers

"A very large per cent of what the farmer can now do to improve his marketing situation consists of adjusting his production to the demands of the market. The rest lies largely in the field of local cooperation." That is the analysis of the present agricultural marketing situation as expressed by Dr. H. C. Taylor, Chief of the Office of Farm Management, United States Department of Agriculture, before the conference of State directors of extension held in Washington. There is no royal road, he said, to the solution of the present economic problems of American farmers.

"If there is any one thing above another to be avoided," Dr. Taylor continued, "it is the danger of putting too much faith in any outside adjustment as the remedy for the present unhappy situation and giving too little attention to what the farmers themselves should do.

"To illustrate what I mean by looking too entirely to one remedy and ignoring others equally if not more important, attention may be called to the view held by a leader of farmers who was in Washington recently. Stated briefly it is this:

"'The farmers will take care of the production problem without any other aid from the Department of Agriculture and the agricultural colleges if only they will provide an outlet for farm products at a satisfactory price.'

Changing Line of Consumption.

"If this could be accomplished it certainly would be a boon to the farmer. It would greatly simplify the problems of farm management if the markets could be controlled so as to absorb at a satisfactory price anything which the farmers may choose to produce and in any quantity which the effort of man and the response of nature may determine. Those who feel that adjusting the market demand to the supply produced is a simple task should not overlook the fact that it involves the full control of the desires of the consuming public and the power so to adjust these desires that the demand would always equal the supply at a price satisfactory to the farmer. It has, apparently, been assumed by some that essentially this result can be attained through educational or booster campaigns to increase consumption.

"What can be done in this direction is very limited. Something can be done to swing consumption from one line to another, but this method can have little effect on the demand for staples, and probably little effect upon the total demand for farm products. If anyone should discover an Aladdin's lamp or any other magic instrumentality which would enable him to control consumption completely and, at the same time, guarantee the happiness of the consumers, he would find a large field of activity. Pending the discovery of this or some other panacea, it is believed that 90 per cent of what the farmer can now do to improve his marketing situation consists in adjusting his production to the demands of the market. The remaining 10 per cent lies largely in the field of local cooperation with a view to providing facilities which would otherwise be lacking, and to avoiding unfair charges for middleman services.

The Farmer Needs Facts.

"As to what the Department of Agriculture and the colleges and experiment stations can do to help the farmer solve the marketing problems, three-quarters consists in providing in an intelligible form, through research and education, the fact basis upon which the farmer must act in adjusting his farming operations to the demands of the market. The remaining one-quarter lies largely in the field of a careful study of the marketing processes and the cost of middleman services, the establishment and administration of grades and standards, controlling the quality of the middleman services, and protecting producer and consumer against unfair charges for middleman services.

"I do not wish to be understood as minimizing the importance of cooperation among farmers. In fact, I believe that in addition to the functions mentioned above, much of the adjustment of production to the market, especially with regard to the kinds and qualities of the products, will be promoted by cooperative marketing undertakings. But I do wish to give especial emphasis at this time to the idea that the marketing problem, so far as it is a problem of securing a satisfactory price for farm products, is to be solved largely through the adjustment of the supply to the anticipated demand, and must come in large measure through the right direction of production.

Must Know World's Needs.

"One can not be oblivious in this connection, of course, to the fact that the farmer sows definite acreages without knowing in advance what the result will be in bushels. This adds greatly to the complexity of the problem of adjusting the supply of farm products to the demand. In this his position is very different from that of the manufacturer. It is believed that public-spirited people in general would look with favor upon a system which would tend to overcome these irregularities in the supply upon the market. Of course, the control involved in carrying out this policy should be so exercised as to guarantee fair play for the consumer as well as the producer.

"If the farmer is to act intelligently in the management of his farm, with a view to the right adjustment of supply and demand, he must be provided with adequate knowledge of the world's probable needs and the production of the various parts of the world to meet these needs. He must know not only the quantities produced in the various countries but the comparative costs of production in each of the competing regions of the world, including the cost of putting the product on the common market. He needs to know not only the present condition of production and consumption throughout the world, but he needs to know and be able to interpret the changes which are taking place in production and in consumption in order that he may be in a position to adjust his farming to changes which affect prices and profits in given lines of production.

Research and Extension Supply the Facts.

"To illustrate: Take the present cotton situation. The price of cotton is unsatisfactory. What can be done about it? The facts with respect to world demand can and should be studied. The facts with respect to production and changes in production can and should be made matters of common knowledge. These facts known, what is the next step? Shall we count on stimulating an increased demand which will take care of the supply at a price satisfactory to the farmer, or shall we look to the readjustment of supply through the readjustment of production? While the stimulating of demand is not to be ignored, it is to the readjustment by production that we must look primarily for the solution of this problem. This means the production of more of other things and less of cotton. This is something tangible and can be done, but it involves a knowledge of what other crops can be grown, how they fit together into a system of farming with a view to economy in production, the cultural methods best suited to each crop, the pests which must be encountered in their production, the disposal of some of the new kinds of crops through live-stock enterprises, which, in turn, must be fitted into the new system of farming, with both the costs of production and the market conditions clearly in mind.

"In other words, the readjustment of production in order to meet a changed

marketing situation involves about everything the Department of Agriculture is doing in the Bureaus of Plant Industry, Animal Industry, Soils, Entomology, the Biological Survey, Rural Engineering, and the Weather Bureau, as well as the Office of Farm Management and the Bureaus of Markets and Crop Estimates. Thus it is that agricultural reconstruction presents problems in the right adjustment of production to the demand the solution of which requires the united efforts of the workers in every line of research and extension, working in close and most sympathetic cooperation with farmers and farmers' organizations. In this problem of adjusting production to market conditions the farmers themselves must play the leading part. They must pass final judgment on what is to be done. In this our rôle is that of research and education, which will give basis for straight thinking and intelligent action on the part of farmers."

WHEAT STOCKS IN COUNTRY MILLS AND ELEVATORS REDUCED

Stocks of wheat March 1 in country mills and elevators were 81,946,000 bushels, as compared with 117,950,000 bushels a year ago, a reduction of 30 per cent, according to estimates made by the United States Department of Agriculture.

Estimates of stocks March 1, in various positions, and exports in the four months, March 1 to June 30, in past years are as follows, in millions of bushels:

Year.	On farms.	Country mills and elevators.	Visible.	Total.	Exports, 4 months.
1921..	208	82	30	320	.....
1920..	165	117	56	338	78
1919..	129	107	123	359	110
1918..	108	66	14	188	47
1917..	101	80	52	242	69
1916..	244	155	71	470	79
1915..	153	86	56	295	91
1914..	152	94	63	309	36
Av.	157	100	58	315	73

BROWN-TAIL MOTH ON FRENCH FRUIT AND ROSE STOCKS

Federal and State inspection of French fruit and rose stocks during the last two months has resulted in the interception of 85 nests of the Brown-Tail Moth in 32 shipments, in contrast with 63 infested French shipments which have arrived in this country during the last nine years. The finding of so many nests in such a brief period indicates that the French Inspection Service is much below the standard of previous years. To meet this situation, all French shipments of rose and fruit stocks are being fumigated at the port of entry under the direction of the Department of Agriculture, as well as inspected at destination by State inspectors. Furthermore, a warning has been sent to the French nurserymen and the French Inspection Service to the effect that if shipments continue to arrive infested with nests of this injurious insect, it may be necessary to cancel all existing permits to import French stocks.

Interceptions have been made by the State inspectors of Connecticut, New York, Indiana, Iowa, New Jersey, North Carolina, Pennsylvania, Maryland, and Federal inspectors in New York City, Philadelphia, and Washington, D. C.

DANGERS OF TB. SHOWN IN A TWO-REEL PICTURE

The danger to farm animals and to human beings from the neglect of animal tuberculosis is graphically illustrated in a new motion-picture film prepared and issued by the United States Department of Agriculture under the title, "Out of the Shadows." The story has to do with the happy family of Henry Benton, a wholesome farmer, with a large and handsome herd of dairy cattle.

A Government inspector tracing an epidemic, suggests a test of the Benton herd, and gives arguments that induce Benton to consent to a tuberculin test. The result of the test shows an appalling condition, and explains the declining health of Benton's beautiful young daughter, who has drunk the milk of a favorite heifer. The clean-up of the farm and Benton's acquirement of a herd of cattle not affected with tuberculosis are results of the inspector's visit. The daughter, however, is not restored to health until after three years in a sanitarium.

The picture is in two reels and carries so strong a human-interest story together with its lesson that it is being widely sought through the loan system of the department, and through purchase by State and local organizations.

CIVIL SERVICE EXAMINATIONS.

The United States Civil Service Commission announces open competitive examinations to fill positions in the Department of Agriculture as follows: Assistant plant breeder, to fill vacancies in the Bureau of Plant Industry; salary, $1,400 to $1,600 a year. Date of examination, April 5, 1921.

Grazing assistant; to fill vacancies in the Forest Service at Dillon, Mont., Steamboat Springs, Colo., and other places in the field; entrance salary, $1,500 a year. Examination, April 13 and 14, 1921.

Junior wharf examiner (food and drugs); to fill vacancies in the Bureau of Chemistry for duty in the field, at $1,200 a year. Examination, April 13, 1921.

Applicants for the above positions should apply to the Civil Service Commission for Form 1312, stating title of examination required.

Laboratory aid in Foreign Seed and Plant Introduction; to fill vacancies in the Bureau of Plant Industry at Washington; salary, $840 to $1,000 a year. Examination, April 13, 1921. Apply to Civil Service Commission for Form 304.

Lay inspector; salary, $1,080 a year; examination, April 13, 1921. Veterinarian; salary, $1,500 a year; examination, May 11, 1921. Vacancies in the Bureau of Animal Industry for duty in Washington. Application forms can be had by applying to the Civil Service Commission, Washington, D. C.

ONCE MORE THE HESSIAN FLY APPEARS IN GROWING WHEAT

(*Continued from page 1.*)

conditions there are said to be not alarming.

There is little that can be done to save a crop of wheat when once it has become infested with the Hessian fly, because the most efficient measures to be taken against it are preventive in character, and must be carried out during the late summer and early fall. It will pay this year, however, for growers in the Eastern States to plow under any heavily infested wheat stubble directly after harvest, especially where grasses, clover, or other forage crops have not been sown with the wheat. In the case of wheat fields that have been killed out during the winter by the Hessian fly, these should be plowed down not later than April 1, where practicable. This destroys the flies before they have emerged, and prevents them from depositing their eggs on the grain in other near-by fields, and thus continuing their destructive work in the current year's crop of wheat.

Farmers' Bulletin 1083, free upon application to the United States Department of Agriculture, contains additional information regarding the control of this pest.

"During our 40 years' experience in live-stock breeding we think the greatest enemy to the business has been the scrub sires of the country, especially stallions, as they are driven from farm to farm and are very prolific. We think the Department of Agriculture has still a large field to work on here, both encouraging the use of the purebred sire and discouraging the scrub."—From a letter to the department from a North Dakota farmer.

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MOTOR VEHICLES SHOW TREMENDOUS INCREASE

Twenty-Two Per Cent More Registered in United States Than in 1920.

Over One Hundred Million Collected in Registration and License Fees in Past Year; Use Made of Revenues During Past Fourteen Years Has Changed Greatly.

A total of 9,211,295 motor cars, including commercial vehicles, were registered last year in the 48 States and District of Columbia, according to figures compiled by the Bureau of Public Roads of the United States Department of Agriculture in a study of revenue available for road-building purposes. There were also registered a total of 238,146 motorcycles. The registration and license fees, including those for chauffeurs, operators, and dealers, amounted to $102,034,106.26. As compared with 1919, the data for 1920 represent an increase of 22 per cent, or 1,645,849 motor cars. This increase alone lacks but 4 per cent of being equal to the total registrations of the United States six years ago.

Great Change in a Decade.

In 1920 in the State of New York alone, the number of motor cars registered, including commercial vehicles, exceeded the total cars registered in the whole of the United States in 1910. Furthermore, the revenues derived from registration in the State of New York in 1920 were about equal to the entire registration revenues of the United States for 1913.

The use made of the revenues has changed with the passing of years. In 1906 the total registrations were approximately 48,000 cars, paying a gross revenue of about $193,000. (Arizona in 1920 paid approximately this amount.) In 1906 the gross registration revenues were equal to less than three-tenths of 1 per cent of the total rural road and bridge expenditures for that year.

The registration revenues in 1920 were equal to about 25 per cent of the total rural road and bridge expenditures for the calendar year 1919. In 1906, practically none of the motor-vehicle revenues was applied to road maintenance or construction, while in 1920, 96 per cent, or a total of $97,997,160.60, was used for this purpose. The remaining 4 per cent not applied to road work was expended very largely for number plates and in carrying out the provisions of the motor vehicle registration laws in the several States. Of the total amount applied to road work 79 per cent, or $77,531,582.57, was expended under the control or supervision of the several State highway departments.

Increasing Amount Spent for Road Work.

For a number of years the general tendency toward devoting an ever-increasing portion of the motor-vehicle revenues to road work under the control and direct supervision of the State highway department has been very noticeable. Prior to 1912 only a very small portion of the motor-vehicle registration was devoted to this purpose. In 1920, 76 per cent of the revenue, or $77,531,582.57, was applied to road work under the direct supervision of the State highway departments, and in addition $20,465,578.04 was applied to road work by counties or other local supervision, but with little or no direct supervision from the State highway departments.

(Continued on page 8.)

ENDS SUPERVISION OF STOCK YARDS—A WAR-TIME ACTIVITY.

Formal announcement of the termination of Government supervision of stockyards and live-stock commission firms, effective March 3, 1921, was made recently by the United States Department of Agriculture, Bureau of Markets. This action brings to a close one of the important war-time activities of the department, dating back to the enactment of the food control act of August 10, 1917, commonly known as the Lever Act, which was repealed March 3, 1921.

Though licenses granted under the act terminated on March 3, the department points out in its announcement that "all rights and liabilities arising under the law, the proclamations of the President, and the regulations thereunder, before the approval of the joint resolution, continue and may be enforced in the same manner as if the Lever Act had not been repealed."

FARM-LAND VALUES LOWER, DEPARTMENT REPORT SHOWS

Decline Attributed to Reduction in the Prices of Crops.

Southern States Are Hardest Hit, Followed by Corn Belt; With Pacific Coast Showing Least Decline—Tobacco Sections Suffer Heavily.

The average price of plowland per acre in the United States decreased about 7 per cent during the past year, according to a report just issued by the United States Department of Agriculture. The average value of plowland per acre on March 1 of this year was $83.78, as compared to $90.01 in 1920, and $74.31, in 1919. The statisticians of the department attribute the decline to the reduction in the prices of crops.

Southern Lands Decline Heavily.

The report shows that the heaviest drop in the price of land is in the Southern States, where cotton is the principal crop. In some sections of these States there has been a decline of 30 per cent in the price of plowland during the year. The average price of plowland in Georgia this year is $36 per acre, while last year it was $46—a drop of about 22 per cent. The average in South Carolina last year was $61, while this year it is $50—a drop of 15 per cent.

Probably the greatest drop in any one State was in Kentucky, and is attributed to the decline in the price of tobacco. In 1920 the average price of plowland in this State was $70 per acre, while this year it is $53. This is a decline of approximately 24 per cent.

Iowa is the State having the highest price of plowland per acre. The report shows that it is valued at $200 this year, as compared with $219 last year—a decline of about 9 per cent. Illinois ranks second in the value of plowland, according to the report, the price per acre being $157. In Alabama and Mississippi the average price of plowland per acre is $26. The Western States show the least decline in prices of land, and in the case of California, Oregon, and Colorado

there is a slight increase over last year. Plowland in California was valued at $130 per acre last year, while this year the average is $135.

The report shows that there was a rapid increase in the price of land from 1917 to 1920, when the highest price was reached. The decline during the past year is not as great as the increase from 1919 to 1920. Land prices are still higher than any year preceding 1920.

MORE FINES FOR HUNTING WILD FOWL OUT OF SEASON

Apprehended for shooting four pintail ducks out of season, a Missouri hunter on March 7, 1921, was fined $200 and costs by Federal Judge Van Valkenburg, sitting at St. Joseph, Mo. This sentence follows closely upon the conviction of a hunter in New Jersey before a Federal judge by whom he was fined $200 and costs and sentenced to jail for 10 days.

The spring flight of migratory birds is at its height during April, and the United States Department of Agriculture, Biological Survey, is putting forth every effort to see that they are permitted to go north to their nesting grounds unmolested. Due to the active cooperation of Federal game wardens and State authorities, fewer violations of the Federal law are occurring this spring than formerly. Nevertheless, some unscrupulous hunters are taking a chance; arrests for shooting out of season are being made by the game wardens and convictions are being obtained in nearly all cases.

WESTERN CLAY IS FOUND VALUABLE IN PAPER MAKING

Clay that is highly colloidal has been found by the Forest Products Laboratory of the United States Department of Agriculture to be very valuable as a loading material for giving finish and printing qualities to paper.

Previous to the discovery made by the laboratory at Madison, Wis., this whitish clay, found in large deposits in the Rocky Mountain region, has had little known use except as an excellent substitute for soap. In the past all the best clay used for loading paper has been imported. Experiments with the American clay from the West show that when this clay is added to the English china clay generally used the paper produced has a superior finish and appearance and a more velvety feel than where the English clay only is used.

HORSES AND TRACTORS ON CORN-BELT FARMS

Cost of Using Tractors and Using Horses Shown in Year's Work.

Investigations in Three States on Cost and Utilization of Power Show That Tractor Displaces 2.1 Horses—Average Life of Tractor More Than Six Years.

During October and November, 1920, representatives of the United States Department of Agriculture visited 286 tractor-owners in Ohio, Indiana, and Illinois. A complete record of all the work done during the year both with tractors and horses was obtained from each farmer. Information from which the cost of using the tractor and the cost of maintaining the workstock could be determined was also obtained.

The investigation was made through the cooperative efforts of the Bureau of Animal Industry, Office of Farm Management and Farm Economics and the Bureau of Public Roads, in accordance with plans outlined at the Farm Power Conference at Chicago, Ill., in October, 1919. The object was to obtain information in addition to that already available in the Department of Agriculture and the various State Colleges of Agriculture, which would aid in determining advantageous forms of power for different farms and different conditions.

Farms Above the Average in Size.

The average size of the farms visited was 258 acres. This is considerably above the average size of all farms in these States.

Two-plow tractors were owned on 174 of the 286 farms, 3-plow tractors on 104, and 4-plow tractors on 6 farms. One farmer owned a 1-plow machine, and one farmer owned a 5-plow machine. Two-plow machines were found on 75 per cent of the farms with less than 160 crop acres, and on 53 per cent of those with 160 or more crop acres.

One hundred and six of the tractors had been in use 1 year, 100 had been in use 1½ or 2 years, 49 had been in use 2½ or 3 years, and 31 had been in use more than 3 years.

On the average the tractors were used for 30.8 full days during the year covered by the investigation. Twenty-three and five-tenths days of this was drawbar work on the home farm, 2.7 days was belt work, and 4.6 days was custom work. Seventy-three of the 286 tractors did less than 20 days work during the year and 26 did 50 or more days work.

The number of workstock still owned varied from 2 head on 11 of the farms to more than 15 on 5 of the large farms. On the average there were 6.8 head per farm at the time of the survey, and their value was $145 per head. In all there were 1,878 head of workstock on the 286 farms and 111 colts less than 1 year of age.

Farm Horse Works One Day in Five.

The average number of full days work per year per horse, for all farms was 68.6. On 20 of the farms the workstock did less than 40 full days work and on 27 they did 100 or more days work per year.

The tractors did 85 per cent of the plowing on these farms, 73 per cent of the disking, 43 per cent of the harrowing, planking, rolling, and packing, 41 per cent of the grain cutting, and about 15 per cent of the loading and hauling of hay.

Of 267 men who did spring plowing, 142 did it all with tractors, 121 used both tractors and horses, and 4 used horses only.

Of 225 who did fall plowing, 190 did it all with tractors, 27 used both tractors and horses, and 8 used horses only.

Of 284 men who did disking all but 15 used tractors for at least a part of it. One hundred and thirty men used their tractors for cutting grain and 37 for drawing the hay loader. A smaller number used their tractors for any other drawbar operation.

In all, the power for 30 per cent of the drawbar work on these farms, as measured by days of horse labor required for it, was furnished by tractors and the remainder by horses.

The average cost per head of keeping workstock on these farms for the year ending November 1, 1920, was $159, and the average cost per farm was $1,076.

This cost includes charges for feed at the average price for the year, chores at 25 cents per hour, shoeing, veterinary, harness, interest at 6 per cent, and depreciation. A manure credit of $15 per head was allowed.

Costs 45 Cents Daily to Feed Horse.

Exclusive of grass and stalk pasture, the average ration per horse consisted of 1.3 tons of hay, 1.2 tons of straw, 0.2 acre of stover, 37.8 bushels of corn, and 22.3 bushels of oats. The total cost of feed per head was $134. Based on present prices (March, 1921) the cost of feed per head would be about $80.

The average cost per day of horse labor for the year of the survey was $2.43. Based on present prices the cost

on these farms would be not far from $1.50 per day.

The average first cost of the 2-plow tractors was $972, of the 3-plow tractors $1,354, and of all tractors $1,140. The average amount spent for equipment, mostly plows and disks, for use with tractors was about $340. The average value of the horse-drawn implements disposed of after the purchase of the tractors was $12.

The average life of these tractors as estimated by their owners is 6.7 years. The annual depreciation of the 2-plow tractors amounted to $164, and of the 3-plow $217. The annual cost of repairs, including the value of the owner's time spent in repairing the tractors, was $39 for both the 2-plow and 3-plow sizes. The tractors had been out of commission when needed an average of about 2 days during the year. A little over 50 per cent had not been out of commission at all when needed and about one in seven had been out of commission five days or more.

The fuel consumption per day for the 2-plow tractors varied from about 18 gallons for fall plowing to about 11 gallons for drawing the hay loader. For the 3-plow tractors it varied from 23 gallons for plowing to 15 gallons for drawing the hay loader. The 2-plow tractors covered 6.6 acres per day in plowing and the 3-plow machines 8.6 acres. The amount of fuel required per acre by the two sizes was practically the same, 2.8 gallons for the 2-plow and 2.7 gallons for the 3-plow tractors.

Little Difference in Plowing Costs.

The average cost per acre of power for the plowing done with 2-plow tractors was about $2 and with the 3-plow about $2.20. The cost of power for the plowing done with horses on these farms was about $2.90 per acre. Based on the present costs of keeping workstock, the cost of power for plowing with horses would be about $1.90 per acre. For most of the other operations the cost of power when furnished by horses was slightly less than when furnished by tractors. The cost per acre of power for disking with tractors was $0.67, with horses, $0.64; for cutting grain with tractors, $0.67; with horses, $0.59. These figures represent the cost of power only, and do not include either the cost of man labor, or that of the implements used.

The average cost per day of 2-plow tractors for drawbar work on the home farm was about $12.65, and of 3-plow tractors about $17.75.

The total cost of power furnished by the tractors for drawbar work at home during the year averaged $341. This drawbar work on the home farm constituted 76 per cent of the total work done by the tractors, and only 76 per cent of the total annual charge for depreciation, repairs, and interest on investment, is included in it. No charges for taxes, insurance, or shelter are included in the costs for either the tractors or workstock.

Nine of these men had started farming with tractors, and the remainder had increased the size of their farms by an average of about 20 acres since the tractors were purchased. There had been no change in size of 172 of the farms, 81 had been increased in size and 24 had been decreased. It is probable, however, that in most cases the tractor was not primarily responsible for the change in size of the farm.

Tractor Reduces Number of Workstock Needed.

On the 172 farms where there had been no change in acreage the number of workstock had been reduced by 2.2 head, an average reduction of 26 per cent. Forty-four of these 172 men had not reduced the number of workstock, 62 had disposed of 1 or 2 head, 43 had disposed of 3 or 4 head, and 23 of more than 4 head. On these 172 farms 1 horse had been kept for each 28 acres (total acres, not crop acres) before purchase of tractors, and at the time of the survey there was 1 horse for each 37.7 acres. For all the farms there had been an average of 1 horse for each 27.6 acres before purchase of tractors, and there was 1 for each 37.9 acres at the time of the investigation. On the farms where there had been no change in acreage there had been 1 horse for each 21.5 crop acres before the purchase of tractors, and there was 1 for each 29 crop acres at the time of the investigation.

With the tractors doing the bulk of the work of plowing and fitting the ground, the cultivation of corn is the operation which requires the greatest amount of horse labor in the shortest time on most of these farms. However, on only 105 of the 286 farms were all the workstock used for cultivation, and on only 38 of the remainder were they all used for any other one operation. On just half of the farms all the workstock were not used for any one operation.

Operating Costs May Be Reduced.

There were great variations on individual farms in the cost of power furnished by both horses and tractors; and by more careful management many farmers could doubtless reduce this cost. Repair costs and fuel consumption of the tractors could in many cases have been reduced by more careful operation. The cost of keeping workstock could have been reduced on many farms by more careful feeding practices. The facts that on 20 of the farms the workstock did less than 40 days of work per head during the year, and that on half of the farms they were not all used for any single operation, indicate that on some farms there are still more workstock than needed for the system of farming being practiced.

The average annual cost of power for the drawbar work on the home farm which was done with tractors was equal to the cost of keeping 2.1 head of workstock and this is practically the average number displaced per farm. On the basis of present prices, however, the cost of keeping workstock has declined considerably more than the cost of operating tractors.

Since, during the year covered by the investigation, the cost of power on the average farm was no greater than if it had all been furnished by horses, any saving in man labor costs, any gain due to getting a larger amount of work done in a given time, and any other advantages connected with the use of tractors which can not be measured directly in dollars and cents, might be considered clear profit. It is doubtful, however, if such gains were great enough to balance the cost of operating the tractors on many of the farms where there was no change in acreage and where no workstock were displaced.

FINDS MORE VIOLATIONS OF GRAIN STANDARDS ACT

More violations of section 5 of the United States grain standards act are disclosed in recent findings of the Secretary of Agriculture, who is charged with administration of the act. While in such cases the act provides no penalty, the Secretary of Agriculture is authorized to publish his findings.

The firm of Cope & Kearney, Omaha, Nebr., during August and September, 1920, received on consignment for sale at Omaha, Nebr., among others, 41 cars of corn, wheat, and oats. When the grain had been inspected and graded by the licensed inspectors, pan tickets showing the grade as well as certain of the grading factors were issued to accompany the samples to the trading floor. Subsequent to their issuance alterations were made by Mr. Kearney in these pan tickets to show either a different test weight per bushel, moisture content, or percentage of dockage. These alterations resulted in indicating a better quality of grain than that actually determined by the licensed inspectors, and the grain was then sold under this false and misleading description on the basis of these pan tickets so altered.

Weekly News Letter

Published every Wednesday by the
UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS
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PRESS SERVICE
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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

AN EVERYDAY REPORT IN MARKETGRAMS IS POPULAR

A recent departure indicating the widespread appreciation of the importance of agricultural market reports is the following advertisement of a national bank of Charlottesville, Va.:

PRODUCERS—SHIPPERS—BUYERS.

The weekly Marketgram service issued by the United States Bureau of Markets is received by us Thursday morning of each week. Movement and prices are given on the following: Fruits, vegetables, hay and feed, grain, dairy products, live stock, and meats.

You are invited to call on this bank for market information in person, by phone, or mail.

The Marketgram, a thousand-word report, is issued by the United States Bureau of Markets every week day, except Tuesday, and is a review of national agricultural market conditions for the seven days immediately preceding the report. Information on prices, movement, and market conditions on fruits and vegetables, hay, feed and seed, grain, dairy products, live stock, and meats at the important shipping and marketing centers, collected by trained market reporters in the field, is given in the reports.

The Marketgram service began only a few months ago, but already some 5,000 newspapers, farm journals, and magazines with a combined circulation of at least 10,000,000 readers have subscribed for the reports and publish them regularly. In every instance the Marketgrams are printed in a prominent place in the publication, a number of newspapers displaying the reports on front pages. Any publication that is not now publishing the Marketgram doubtless would do so if requested by its readers. The Bureau of Markets will be glad also to supply the reports to banks desiring to advertise this service for the benefit of depositors and others interested.

SECRETARY WALLACE OPENS BIG EXHIBIT OF AMARYLLIS

Secretary of Agriculture Wallace officially opened the biggest amaryllis show ever held in the United States recently, when more than 1,000 plants, all in bloom, were displayed in one of the department's greenhouses. Between 4,000 and 5,000 blooms of all sizes and varieties were exhibited. More than 100 of the plants were seedlings propagated by specialists of the department who have been working for 20 years in developing new and improved varieties.

The show this year was twice as large as any amaryllis show ever held in this country. Last year the department held a similar show, at which approximately 700 plants were exhibited, but at that time some of the blooms were not at their best for exhibition purposes, while this year practically every flower shown was in its prime. Some of the blooms measured a foot across the mouth of the trumpet.

Hundreds of visitors attended the show, many of whom were commercial growers from all parts of the country. Expert growers were much interested in the new varieties on display and they plan to propagate some of the new species and place them on the market.

CHANCE FOR COOPERATION IN AGRICULTURAL EXTENSION

One of the difficulties encountered by the county agent is the lack of trained teachers in his county upon whom he can depend for assistance, according to L. S. Hawkins, of the Federal Board for Vocational Education. "The cooperation of county agents and teachers trained in agriculture is one of the many ways the United States Department of Agriculture and the Federal Board for Vocational Education can combine their efforts for the greatest good," said Dr. Hawkins at a recent conference of extension specialists of the department. "Think what it would mean," he said, "if a county agent could have together under his direction every day 10, 15, or 25 trained agricultural teachers. They would make the very best kind of extension workers, for through the pupils they teach the plans and work of the county agent in carrying out extension campaigns would be carried to practically every home."

The difference between the agricultural extension work of the Department of Agriculture and the Federal Board for Vocational Education is that the former works directly with farmers, their wives and children, through county agents, home demonstration agents, and boys' and girls' club leaders, while the latter works through schools. The purpose of the board is to cooperate with the States in providing vocational schools—which teach agriculture when this subject is advisable—and particularly in helping to pay the salaries of vocational teachers; to cooperate with the States in the preparation of teachers for those schools; and to produce, either directly or in cooperation with the Federal or State agencies, material which will be of assistance to the States in the schools.

HARD FIGHT TO BE WAGED AGAINST THE CORN BORER

Suppressive measures against the European corn borer are to be applied vigorously this spring in the western part of New York State to test the possibility of preventing the natural spread of this pest. Specialists of the United States Department of Agriculture in charge of the work have about completed their plans, which will be carried out in cooperation with State agencies.

The infested area where the experiment is to be tried out borders on Lake Erie and partly on that section of Canada where the corn borer made its appearance last year. The fight is to be carried against the insect while in its winter quarters. The corn stubble and refuse that have been lying in the fields since last year's harvest will be cleaned up and burned.

Meanwhile, as another method of attack, thousands of cocoons of a small, wasp-like insect whose grub has been found to be a parasitic enemy of the corn borer are being sent to the United States by a representative of the department who is in southern France studying the enemies of the pest. Thus far about 5,000 cocoons have been received at the Boston office of the department, where they are hatched out and the winged insects liberated in hundreds in infested fields. The European corn borer, which has been known in this country but a few years, is looked upon as one of the most dangerous insect pests that have made their appearance in the United States. Some fears are entertained that it will eventually make its way to the corn belt. Infestations of the pest occur in sections of New York and Massachusetts, where Federal quarantines to check the spread of the insect are in force.

Federal Inspection of Hay May Be Established During Coming Fiscal Year

In view of the many requests being received by the United States Department of Agriculture, Bureau of Markets, for information concerning the conditions under which the Federal inspection of hay will be available, that section of the law of 1921 providing for such inspection, with a brief explanation of the provisions relative to its application, are given here:

For enabling the Secretary of Agriculture to investigate and certify to shippers and other interested parties the quality and condition of fruits, vegetables, poultry, butter, hay, and other perishable farm products when received in interstate commerce at such important central markets as the Secretary of Agriculture may from time to time designate, under such rules and regulations as he may prescribe, including payment of such fees as will be reasonable and as nearly as may be to cover the cost for the service rendered:

Provided, That certificates issued by the authorized agents of the department shall be received in all courts of the United States as prima facie evidence of the truth of the statements therein contained.

Anyone May Ask for Inspection.

The first provision makes Federal inspection available to shippers and other interested persons, but such inspection is not compulsory and will be made only upon a request from an interested party.

Second, only that hay can be inspected which has been received in interstate commerce.

Third, inspectors can be located at such important central markets as the Secretary of Agriculture may from time to time designate.

Fourth, the inspection shall be under such rules and regulations as the Secretary of Agriculture shall prescribe. Under this provision the Bureau of Markets is now engaged in preparing uniform standards or grades for hay based upon the fundamental factors entering into the market grades for hay.

Fifth, it is provided that inspection fees shall be reasonable, but as nearly as possible to cover the cost for the service rendered. The actual amount of the fees can not be determined until the manner in which the inspection will be made has been prescribed.

Sixth, certificates issued by the authorized agents of the Department of Agriculture—i. e., Federal inspectors—shall be received in all courts of the United States as prima facie evidence of the truth of the statements therein contained.

Up to the present sufficient funds have not been available to carry out the provisions of this law in respect to hay. An inspection service for the other commodities mentioned has been established in several important markets, and many inspections have been called for. In fact, more inspections have been requested than the limited number of inspectors now in the service have been able to make.

Many Inspections Have Been Called For.

The hay-inspection service probably will be established in several of the larger markets during the next fiscal year if sufficient funds are available.

While the Federal inspection of hay can not be made as broad as the supervision of the grain grades, because of the limitations of the law, it will make the inspection of hay in the terminal markets, which may be designated as inspection points, available to many shippers and dealers to whom no official inspection is now available.

The rules and regulations under which inspections will be made have not been formulated, but announcements concerning them will be made at or before the hay-inspection service is established.

STATE WORKERS TO ASSIST IN FIGHTING CROP INSECTS

To aid in the general work of combating crop insect pests, the Bureau of Entomology of the United States Department of Agriculture is organizing a survey that will cover practically the whole country and deal with all the more important insects that destroy crops. Invitations have been sent to prominent State entomologists throughout the country asking them to take part in the work, which will be similar to the one attempted, and for a time successfully conducted, during the early war period.

It is planned to gather and disseminate information concerning the status of insect pests; to give information on the first appearance of migratory pests, so that precautionary measures can be taken; to accumulate information on fall and winter conditions of the insects as a basis for forecasts. An additional important feature of the work will be the preparation of a report of careful estimates of damage done by insect pests to the important crops.

As there is no Federal appropriation for the survey, the work for each State, it is said, will have to be conducted by State officials and through available State organizations. The Department of Agriculture will supply the information which it obtains through its own agents, and will act as a clearing house for the information received from the several States. It is planned to issue the information in monthly reports, supplemented by a comprehensive annual report, and special reports on particular crop pests from time to time.

GRAIN STANDARDS GROW IN POPULARITY.

Eastern grain dealers, buying for export shipments, are demanding that their purchases be covered by Federal appeal grade certificates, say marketing specialists of the Bureau of Markets, United States Department of Agriculture, in pointing out the growing popularity of the Federal grain grades.

Before Federal appeal grade certificates can be had the United States grain standards act, which is administered by the Department of Agriculture, requires that the grain be first inspected by a licensed inspector and that such inspection be appealed to a Federal grain supervisor. Ordinarily the filing of such an appeal is decided upon after the licensed inspector has issued a certificate of grade unsatisfactory to one or more of the parties concerned. The Chicago district office of Federal grain supervision, however, is now entertaining four appeals involving 220,000 bushels of shelled corn, the appealing of which was decided upon before the grain was inspected.

PIG CLUBS INTRODUCE NEW METHODS.

Instead of tying a rope to one foot of the pig and tethering it to a stake or tree, which is the general custom in Guam, the boy and girl pig-club members of the island build pens for their pigs. This method, new to many of the islanders, is being encouraged by the Guam Agricultural Experiment Station, maintained by the United States Department of Agriculture, and through the club members it is being introduced into many parts of the island. Berkshires are raised almost exclusively. Many of the boys and girls have Berkshire pigs, and a large percentage of those who own native sows are breeding them to Berkshire boars. According to a report received by the United States Department of Agriculture, pig-club members in Guam raised 204 pigs last season and made 74 exhibits of pigs at the district fairs.

Nicotine Sulphate Dust Destroys Certain Crop Pests in California

The walnut aphis, the insect that destroys the foliage of the walnut groves of California, can testify to the narcotic effect of nicotine. Because the insect feeds upon the under side of the leaves it is very hard to control with ordinary spray applications, but 2 per cent, by weight, of nicotine sulphate at 40 per cent strength mixed with kaolin to give the poison bulk will go wherever the insect goes. The nicotine is applied to the foliage in the form of dust which permeates to every crevice and leaf fold. A single touch of the mixture is sufficient to make the aphis let go all holds and come tumbling to earth.

Tries Wider Use.

Nicotine sulphate dust has been so effective against the walnut aphis that the United States Department of Agriculture, Bureau of Entomology, decided to test it on truck-crop insects. Recommendations based on the results of these tests are to be found in Department Circular 154.

While a 2 per cent mixture of the 40 per cent nicotine sulphate was sufficient to kill the walnut aphis, it was soon apparent that for other species a stronger proportion must be mixed with the kaolin. The melon aphis required about 5 per cent of the poison, but with that amount the results were entirely satisfactory. The most satisfactory type of machine for applying the dust was found to be a hand operated bellows duster. With such a machine one man can cover 2 acres of full-grown melon plants in a day, using about 50 pounds of the mixture. The nicotine sulphate-kaolin mixture costs about 12 cents a pound in the 5 per cent strength.

The cabbage aphis succumbed to a 6 per cent mixture. The pea aphis, onion thrips, and western cucumber beetles were all susceptible to the dust in various strengths. The proper proportions and methods of application are given in the circular.

The development of this poison puts a very effective weapon in the hands of the truck grower, specialists of the department say. Dust can be applied more easily and quickly than spray, and larger areas can be treated in a given time. Its killing efficiency is always equal and usually excels that of spray. It costs less than spray, and power dusters are cheaper than power sprayers. In dust form the poison can be combined with arsenate of lead or sulphur and applied dry for insects and fungous diseases.

Nicotine dust will lose its strength if it is not kept in air-tight packages. It is sometimes disagreeable to the operator, particularly if the latter is inexperienced. It can not be combined with Bordeaux mixture except when the latter is dry.

In action the nicotine sulphate dust is similar to nicotine sulphate spray but much more rapid. When used as recommended by the Department of Agriculture, the dust has proved superior to spray in controlling certain insect pests.

ALFALFA PEST CAN BE KILLED WITH ORDINARY POISONED BRAN

A close study of the life and habits of the range crane fly and its larvæ by entomologists of the United States Department of Agriculture in the grasslands and grain fields of California has resulted in the discovery of new facts which offer means of extermination. The larvæ, which are blackish worms from one-half to 1 inch in length, have been found in such great numbers as to kill off entire tracts of alfalfa, grain, and grass.

The entomologists discovered that the worms come to the surface at night to feed on the young plant shoots. They also discovered that the pests will eat wheat bran, which is commonly used as an insect bait. They tried a poisoned bran mixture, after the formula used in poisoning grasshoppers, which consists of 1 pound Paris green to 25 pounds of bran, mixed in water enough to make a crumbly mash, and spread on the land at the rate of 10 to 20 pounds to the acre. From 70 to 90 per cent of the insects were killed.

FIND LOW GERMINATION OF IMPORTED SUGAR BEET SEED

Between November 15, 1920, and February 21, 1921, over 3,250,000 pounds of sugar-beet seed were imported into the United States. Germination tests made by the United States Department of Agriculture show much of this seed to be low in vitality. Only 36.5 per cent of the total importation was equal in quality to the customary standard, which requires 75 per cent of the seed balls to give sprouts, with 70,000 sprouts per kilogram of seed.

In importations aggregating enough seed to plant 20,000 acres, less than one-half of the balls gave sprouts.

The low germination of this seed shows the importance of testing each lot before sowing, so that the rate of seeding may be heavy enough to insure a full stand in all cases.

NEW RECORD IN CERTIFYING COTTON.

During the month of January 102,300 bales of cotton were delivered in New York and New Orleans on future contracts made in accordance with the United States cotton futures act. Of this amount 89,600 bales were delivered in New York and 12,700 bales in New Orleans. During that month the Division of Cotton Marketing of the Bureau of Markets, United States Department of Agriculture, classed and certificated 64,818 bales for delivery at New York and 19,386 bales for delivery at New Orleans. In addition, 2,306 bales were classed at New York and 1,971 bales at New Orleans in the preliminary informal classification service of the division, making a total of 67,124 bales classed at New York and 21,357 bales classed at New Orleans during the month.

This is the largest quantity handled in any month since the inauguration of Federal supervision of cotton-futures exchanges. Several large buyers of future contracts for cotton demanded the deliveries contemplated in the contracts, and this resulted in large quantities of cotton going to the New York and New Orleans markets. All cotton that is to be delivered on future contracts has to be classed and certificated by the Bureau of Markets prior to delivery.

MOISTURE ABSORPTION OF WHEAT.

A recent report made by the Portland, Oreg., office of the Grain Division of the Bureau of Markets, United States Department of Agriculture, indicates that some of the statements published with regard to the amount of moisture absorbed by sacked grain during the "rainy season" in the Pacific northwest are extravagant.

The report in question was based on 2,034 cars of wheat receipts sampled during recent years. The wheat of the Pacific northwest region is very dry at thrashing time, and from then on until about March gradually absorbs moisture. Between March and August some of this moisture is given off. The average moisture content of wheat for the three years during which studies were made was 9.1 per cent in August, 11.3 per cent in March, and 10.6 per cent in July. The data for each separate year and section show the same relative changes.

Keep Chicks Growing Properly By Providing Clean Coops, Feed, and Water

The enthusiasm with which many poultry raisers, particularly beginners, start in the spring with young chicks sometimes lags as the season advances and the chicks get old enough to shift for themselves. If care is neglected at this period, however, success is improbable. The baby chicks may be smart little fellows from strong, vigorous, parent stock, and they may have been brooded carefully for the first two or three weeks, but unless they receive proper care and management during their later growing period they will not develop properly, and many of them will be lost by sickness and disease. This is the timely warning made by poultrymen of the United States Department of Agriculture in Farmers' Bulletin 1111, "Management of Growing Young Chicks," published by the department, in which is given the essentials to proper growth and development of chicks. The bulletin is written briefly and in simple terms for beginners, especially members of boys' and girls' poultry clubs.

Provide Suitable Food and Care.

The chief essentials to the proper growth of chicks, according to the bulletin, are good coops, or houses, cleanliness, proper feed and water, shade, and free range. Growing chicks should be provided with large, roomy coops or houses, which will give them a comfortable place to stay at night and during stormy weather. The bulletin suggests no particular kind of house, but states it should be so built that it will provide the chicks with plenty of light, pure air and sunshine, and protect them from dampness and storms of all kinds. It should be arranged so that it can be cleaned easily and frequently, which is very important.

Chicks should never be crowded in brood coops, for crowding will cause them to become overheated, resulting in improper growth and sometimes in dead chicks. A good house can be built from a dry-goods box or a piano box, which can be covered with tar paper, the total cost being small.

Sickness or disease usually starts in unclean quarters, and in such places lice and mites are always more plentiful, the bulletin says. The coops should be cleaned and sprayed once a week, and clean shavings, chaff, or sand put on the floor. Examine the chicks and houses often for lice and mites, and if found they should be gotten rid of at once. Farmers' Bulletin 1110 gives directions for fighting lice and mites.

Feed Right for Rapid Growth.

The three kinds of feeds most necessary for rapid growth are grain feed, green feed, and dry mash. A grain mixture should be fed night and morning, giving as large a quantity as the chicks will eat clean, but no more. A good mixture for growing chicks consists of three parts cracked corn, two parts wheat, and two parts hulled oats. Kafir corn or rolled or hulled barley may be substituted for hulled oats. A supply of fresh green feed is almost as necessary as grain for growing chicks. They obtain plenty of it if they have free range, but if kept in confinement, lawn grass, beet tops, cabbage, lettuce, or other such green feed, should be supplied regularly.

A dry mash should be kept before growing chicks at all times after they are three or four weeks old. It is best to feed it in a hopper inside the building, or where it will not be exposed to rain or wet. The bulletin suggests the following mash: Two pounds corn meal, 2 pounds middlings, 1 pound oatmeal, 2 pounds wheat bran, 1 pound beef scrap, and ¼ pound charcoal.

Grit and oyster shells should be provided so the chicks may help themselves whenever they wish. When sour milk can be obtained it should also be kept before the chicks, as no feed is regarded better for them. When this is given the amount of beef scrap in the dry mash may be reduced one-half. Plenty of fresh, clean water is absolutely necessary, and in hot weather it should be provided twice daily in dishes that have been thoroughly cleaned.

The bulletin emphasizes the importance of free range and shade for growing chicks. They are necessary if chicks are to grow rapidly and develop into vigorous fowls. When growing chicks have free range they obtain quantities of green feed, bugs, worms, and other things, therefore they require less grain and are less liable to sickness and disease.

QUICK DEATH FOR CUTWORMS.

Cutworms are reported to the United States Department of Agriculture as making a clean sweep of the wheat lots on the experimental farm of the department's dry-land agricultural project at Woodward, Okla. The cutworms are of the species known as the granulated cutworm.

Poisoned bran bait is the specific remedy for cutworms. The accepted formula is wheat bran, 50 pounds; Paris green or crude arsenic, 2 pounds; black strap molasses, 2 quarts; water, 2 to 4 quarts or more as needed. Mix the bran and poison thoroughly in a dry state, then add the diluted molasses, and stir vigorously until thoroughly mixed. Distribute the bran over the infested field broadcast, taking care to sprinkle it sparingly around each hill. Middlings or alfalfa meal may be substituted for bran.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended March 19, 1921:

Natural and Artificial Brooding of Chickens. Farmers' Bulletin 624.

Fresh Vegetables and Fruits as Conservers of Other Staple Foods. Farmers' Bulletin 871.

Farm Practice in Growing Field Crops in Three Sugar-Beet Districts of Colorado. Department Bulletin No. 917.

Black Walnut, Its Growth and Management. Department Bulletin No. 933.

Australia and New Zealand as Markets for American Fruit. Department Circular 145.

Developing an American Utility Horse. Department Circular 153.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 871; Department Bulletin No. 933; Department Circular 145.

HAWAIIAN SUGAR CROP BELOW AVERAGE.

Last year's Hawaiian sugar crop was the smallest of the five years ending September 30, 1920, according to revised figures issued by the Bureau of Crop Estimates, United States Department of Agriculture. The production of 555,727 short tons of sugar in 1920 was 8 per cent below the average of the preceding four years. There was a drop of 5 per cent in the harvested cane area, and of 5 per cent in the cane yield per acre, due to a somewhat unfavorable year for cane production. Thus the total cane produced for sugar was about 9 per cent below the average of the four years 1916–1919. However, the cane harvested in 1920 yielded 2 pounds of sugar per short ton more than the average.

Monthly Cost of Producing Milk Shows Wide Variation Through the Year

In winter the cost of feed, bedding, and pasture amounts to 39 per cent of the yearly cost of producing milk in a typical Vermont dairy section, while in summer it amounts to 15.9 per cent, specialists of the United States Department of Agriculture found as a result of a study covering two years in a section of that State where milk was produced for market. The report of this study is now published in Department Bulletin 923, Unit Requirements for Producing Milk in Vermont. While the figures obtained show the requirements of producing milk in that particular section, and may be approximate of the requirements in similar sections, the specialists point out that they do not apply to dairy sections where other conditions and methods of management prevail.

Quantity of Feed Varies.

It was found that 31.1 pounds of concentrates were required to produce 100 pounds of milk in winter, while to produce the same amount in summer only 8.7 pounds were necessary. Other requirements for producing this amount of milk in winter were: Hauling and grinding concentrates, 2 cents; dry roughage, 129.9 pounds; silage and other succulent roughage, 191.3 pounds; bedding, 11.2 pounds; man labor, 2.7 hours; horse labor, 0.6 hour; other costs, 55.5 cents.

In summer the unit requirements for producing 100 pounds of milk other than concentrates were: Hauling and grinding concentrates, 0.5 of a cent; dry roughage, 18.7 pounds; silage and other succulent roughage, 27.8 pounds; pasture, 0.1 of an acre; man labor, 2 hours; horse labor, 0.4 hour; other costs, 42.5 cents.

In one year it was found that 1,030 pounds of concentrates were required to keep a cow. Other requirements were: Hauling and grinding concentrates, 61 cents; dry roughage, 3,000 pounds; silage and other succulent roughage, 5,307 pounds; bedding, 263 pounds; pasture, 3 acres; man labor, 123 hours; horse labor, 24.1 hours; other costs, covering interest, taxes, and similar items on the dairy's share of buildings and equipment, but not including management, $25.36. It was determined that the dairy's share of the total investment in buildings, equipment, and herd amounted annually to 11.5 per cent of the total inventory value.

Copies of this bulletin may be obtained from the Division of Publications, United States Department of Agriculture, Washington, D. C.

MOTOR VEHICLES SHOW TREMENDOUS INCREASE

(*Continued from page 1.*)

In most States the motor-vehicle revenues are devoted to maintenance and repair of the State roads or other improved highways. These States seem to have solved fairly well the difficult problem of securing funds for the maintenance of the more important roads under the ever-increasing traffic requirements. As both the traffic and the revenues increase with the number of cars, there apparently exists a possibility of so adjusting the registration rates as to keep pace with the ever-growing maintenance changes.

A number of the States having in general but a small mileage of improved roads have recently adopted the plan of capitalizing the motor-vehicle revenues and devoting these funds to road construction. The States doing this are Illinois, Maine, Minnesota, Missouri, Nevada, Utah, and Wyoming. In them bonds have been voted or issued for road construction, and the principal, in some instances also the interest, is to be paid entirely from the motor-vehicle revenue.

Limit Load of Motor Trucks.

At the beginning of 1921 there were still seven States in which motor trucks were registered at the same rate as passenger cars, but in recent years there has been a very decided tendency in most States to increase the fees required for motor trucks over and above those required for passenger cars. This increase is usually based on the weight of the truck and its carrying capacity, its horsepower, or a combination of these factors. The most general practice seems to be toward definitely limiting the maximum total road weight of the vehicle and basing the registration fee on the capacity of the truck. Some few States have adopted a scale of fees, which in actual practice serves to make the operation of very heavy trucks impracticable.

In Colorado, New Mexico, and Oregon, in addition to the registration fees, a State tax on gasoline or other products used for the propulsion of motor vehicles is also levied. In some States motor cars are taxed as personal property in addition to the required registration fees. In Alabama, Delaware, Idaho, Iowa, Michigan, New Hampshire, New York, North Dakota, Oklahoma, Oregon, South Carolina, Pennsylvania, Tennessee, and Vermont, the registration fees are in lieu of all personal property taxes.

ARIZONA SHEEPMEN RECEIVE EMERGENCY RANGE PERMIT

In order to prevent, if possible, the total loss of their lamb crop, sheepmen near Phoenix, Ariz., have been given a permit by the Forest Service, United States Department of Agriculture, to graze their flocks on the Crook and Tonto National Forests.

In the past sheepmen from the northern ranges of Arizona have wintered their flocks on the desert near Phoenix, keeping them there until after the lambing time, in February. Under ordinary climatic conditions rains in November and December cause the desert to become in the early spring a vast meadow, covered with a growth of succulent alfilaria. Thus far this year little or no rain has fallen on the desert, and as a consequence there is practically no pasturage for the 350,000 odd sheep in these northern range flocks.

The high mountains to the north, over which passage for sheep in winter is impractical, shut off possibilities of reaching pasturage in that direction, while the desert bars egress in other directions. When rainfall has been lacking in former years, it has been possible for the sheepmen to buy alfalfa hay from the farmers in the near-by Salt River Valley for from $6 to $8 a ton. In 1920 nearly all the former alfalfa land was planted to cotton, and the little hay offered for sale in that locality this winter sells around $24 a ton, a price higher than the sheepmen can afford to pay.

The strip in the Crook and Tonto Forests, which the Forest Service has thrown open to the sheepmen, is 3 miles wide and 50 miles long and lies adjacent to the desert in the foothills of the mountains. The concession offers temporary relief that was welcomed by the sheep owners, but unless plenteous rains fall soon the sheep industry in that part of the country faces serious disaster during the new two months.

A fireplace is a very good form of foul-air flue, say specialists of the United States Department of Agriculture, and if the house has several fireplaces other such outlets are not necessary. If several rooms open into one in which there is a fireplace this is usually sufficient for all the rooms. All fireplaces should have dampers so as to assure positive regulation as a vent flue.

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THE MEAT SITUATION SHOWED RADICAL CHANGE LAST YEAR

Decline in Pork and Beef Production Most Important Features.

All Classes But Veal Show Falling Off—Exports Drop 51 Per Cent—New Zealand Lamb Features Imports—Housekeepers Learning to Avoid Waste.

There was less meat produced, less exported, and less consumed in the United States last year (1920) than in either of the two previous years, although the consumption in 1919 and 1920 varied but little, the great change being in the exports. These and other facts are brought out in a series of tables recently compiled by the Bureau of Animal Industry, showing the annual status of the meat situation for the calendar years 1907 to 1920, inclusive. The data for each year includes: (1) The total slaughter, which is divided into federally inspected and nonfederally inspected, (2) the exports and imports, and (3) the consumption, total and per capita, of each kind of meat and of all meats combined. The same information is given for lard separately from pork. Some of the salient points indicated by the tables are as follows:

Beef Declines Since War.

Beef growers made their supreme war effort in 1918, and during that year sent to market 15,750,400 animals, which yielded slightly over seven and one-half billion pounds of dressed beef. This number has never been approached before or since. In two years the cattle slaughterings have fallen to 12,176,400, with an accompanying decline of one and one-half billion pounds in beef production.

The exports of beef products fell from 728,000,000 pounds in 1918 to 164,000,000 pounds in 1920. This was to be expected, as the United States for several years before the World War was not a beef-exporting country. South America and Australasia are now the great sources of cheap beef and mutton and naturally will dominate the export trade in those commodities.

Ten years ago the consumption of beef per head of the population in the United States is shown to have been 78 pounds; last year it was not quite 56½ pounds. Beef consumption in the American household has undergone a great change during this time, especially in reducing waste, and doubtless a considerable part of the difference between these amounts formerly found its way into the garbage can.

Perhaps the most outstanding feature of the domestic meat situation in recent years has been the increase in the production and consumption of veal. The demand for calf products has caused a steady increase each year for the last six years, and calves marketed in 1920 more than doubled the number in 1914 and 1915. True, the consumption of veal in 1920 was little more than one-seventh that of beef and one-ninth that of pork, yet the fact remains that it is the only class of domestic meat that has made a consistent annual gain in recent years.

New Zealand Lamb a Factor.

The table showing sheep and lamb slaughter is marked by considerable irregularity. The slaughter was greatest from 1911 to 1914, after which it declined for three years, then increased for two years, and in 1920 again declined.

Exports and imports of mutton and lamb have been almost negligible until last year, when New Zealand frozen lamb carcasses were imported in large quantities, marking an epoch in the trade. The total weight imported during the year was 101,000,000 pounds, nearly one-fifth of the total domestic production of both mutton and lamb. It is not to be assumed, however, that this is the beginning of a permanent trade of such magnitude. The importations, in a sense, were merely an incident due to the war.

The New Zealand product, as well as that from other sources, normally is absorbed by the English market, but the unusual conditions following the war caused the British last year to be overstocked, and the meat found an outlet in this country. This quantity of lamb, it may be remarked, is of somewhat less significance on the other side than it is

(*Continued on page 8.*)

WHEAT SUPPLIES IN COUNTRY NOT BELIEVED EXCESSIVE

Amount on Hand March 1 About 5 Per Cent Less Than Year Ago.

Carry Over Slightly More Than Half of Recent Years—Exports Have Been Heavier Than Any Previous Year—Canadian Imports Have Been Absorbed.

That wheat supplies in the United States as of March 1 are not excessive is the view taken by specialists of the Bureau of Markets, United States Department of Agriculture.

The estimate of the Bureau of Crop Estimates made public March 8 showed 208,000,000 bushels of wheat on farms, and another estimate announced March 10 placed the amount of wheat in country mills and elevators at 82,000,000 bushels. To these totals was added the visible supply at terminal points, making a grand total in the three positions of 320,000,000 bushels.

On March 1, 1920, the amount of wheat held in the three positions was estimated to be 338,000,000 bushels, and on March 1, 1919, the amount was placed at 359,000,000 bushels. Thus the amount on March 1 of this year is 18,000,000 bushels less than a year ago and 39,000,000 bushels less than two years ago.

Importation Placed at 40,000,000 Bushels.

The amount of Canadian-grown wheat imported into this country for consumption is, roughly, placed at 40,000,000 bushels. The fact that this grain has been imported and for the most part already absorbed operates to make the Canadian surplus just that much less.

In other words, but for the importation of 40,000,000 bushels of Canadian wheat the supply in the United States on March 1 would have been 280,000,000 bushels instead of 320,000,000.

From the supplies on hand March 1 four months' consumption and seed requirements must be deducted. The remainder is the surplus for export and

carry over into the new-crop year, beginning July 1.

Summarized, the supply and requirements of the United States on March 1 would show total supplies in three positions of 320,000,000 bushels, from which must be deducted the requirements for consumption and seed, estimated at 200,000,000 bushels, and the probable exports amounting to 80,000,000 bushels, thus leaving a carry over on July 1 of 40,000,000 bushels. This amount of carry over compares with an average carry over during recent years of 70,000,000 bushels. Exports of American wheat are reported heavier to March 1 this year than any previous year.

HOTEL MANAGERS TEST DEHYDRATED SOUP MIXTURE

Encouraging letters from hotel managers in practically every section of the country are being received by the United States Department of Agriculture as evidence of the success of the department's efforts to popularize the use of dehydrated products. Three thousand quarter-pound packages of commercially dehydrated vegetable soup mixture were sent to as many hotels with a request for a personal test of the product, and a report on its merits.

Replies received thus far show a keen interest in the dehydrated product as a substitute for fresh vegetables. Many of the writers declare it is not only cheaper, but equal to the fresh article in many respects.

One interesting feature is the way in which the chefs of many of the leading hotels fall in line with this departure from the sacred canons of their profession. Some prejudice naturally would be looked for in this quarter; but almost without exception, after suggesting slight changes in the proportion of certain vegetables used in the mixture, they put their approval on the new product.

As to cost, it is said, one pound of the vegetable soup mixture makes 125 portions. According to one hotel manager, if it made only 48 portions the cost would not greatly exceed that of fresh vegetables. In addition to hotels, the department, through its Bureau of Chemistry, is endeavoring to interest institutions, such as hospitals, in the use of dehydrated products. It is sought, too, to reach the individual housewife. Thus far the work has been very successful, it is said, the chief difficulty being that of overcoming old prejudices.

The work of cultivating a garden will be greatly reduced if special attention is given to the preparation of the soil before the seeds are planted.

IDLE LANDS IN THIS COUNTRY INCREASE WITH RAPIDITY

Important Need of Reforestation is Apparent, Says Chief Forester.

Practically Every Industry in the Country Dependent on Some Form of Forest Products—Abundance of Forest Land to Support All Industries If Kept at Work.

Timber depletion has now reached a point in this country where three-fifths of the primeval forests are gone and where 61 per cent of the timber that is left is west of the Great Plains, Col. W. B. Greeley, Chief Forester, Forest Service, United States Department of Agriculture, recently told the members of the Chicago Association of Commerce.

Liberal use of American forests was a necessary part of the commercial growth of this Nation, Col. Greeley believes, but reforestation should have been practiced, if not from the start, at least in late years. There is an abundant area of forest land in this country to support all industries, and a liberal supply of wood is most necessary to the people of this country. It was thought that, like the European countries, we would use, when our civilization was older, but one-third or one-half as much wood per capita as we did in the early days. But this rule does not affect the American people. The older the States and communities in this country grow the more timber they seem to require in one form or another.

Demands for Timber Continue to Grow.

Many substitutes have been devised for wood, and yet the great demand of the country for timber continues to grow. More wood is used in construction to-day than before the discovery of concrete, and more wood is used in building railway cars than before the steel or part-steel car was developed. This is apparently true in nearly every industry.

Abundant and widely distributed forests have meant to the United States homes for the masses of the people beyond the standards of any other nation. They have placed newspapers and magazines on the average family table. They have contributed largely to social and industrial conditions which promote democracy and constructive energy rather than discontent and destructive social forces bred by hard and comfortless conditions of life.

The idleness of 81,000,000 acres of forest land, an area increased by 8,000,000 to 10,000,000 acres annually, destructive logging, and still more destructive forest fires are the factors at work to increase the timber shortage.

Forest Land Enough If Kept Growing Trees.

The exhaustion of American timber has not come about because the forests have been used so freely but because of the failure to use forest-growing land. In a nutshell, the problem is that the United States is cutting wood out of its forests three or four times as fast as it is being grown. Much of the land on which timber stands or has been cut off will always be forest land. It is ample to grow all the wood needed for the use of the people of this country and for export trade in lumber and products manufactured from lumber, if the land can be kept at work growing trees. Timber for the future is simply a matter of putting idle land to work.

A surprising amount of reforestation has come about by chance, but it is manifestly impossible to depend on chance for adequate reforestation of much of our cut-over lands. As lumber is a public utility, it seems wise for the Federal Government to acquire as many acres of forest as possible and administer it nationally; yet for the Government to acquire all the forest land in the United States is impossible. Over three-fourths of it is now in private hands, and a large proportion necessarily must remain under private ownership.

Every reasonable encouragement should be given to the land-owner to grow timber on his own account in the ways best suited to his own purposes, but by some means or other the public must see to it that forest lands not needed for agriculture do not lie idle. The regulations imposed must be reasonable and equitable. Obviously the owner of the land can not do it all. The public must aid him in overcoming the hazard of forest fires and must recognize that the present methods of taxing forests in many regions are equivalent to taxing a farm crop twice a week during the growing season.

To grow timber on the average tract of land, doing it as a public utility, the things must be done. The owner must be given the benefit of a moderate tax while his crop of timber is being grown it must be protected from forest fires due to the negligence of his neighbor or the negligence of the community; and he must be required to employ sufficient safeguards in the way his timber is cut, his slashings disposed of, and fire danger avoided to actually reforest the land.

Don't plant a garden where the sun does not shine for at least five hours each bright day.

Paper-Making Industry Must Turn to Professional Foresters for Aid

"Pulp-wood costs and values have now reached a point where foresters can prove to paper manufacturers that they must seriously consider plans for the growing of their future supply of timber," said R. S. Kellogg, secretary of the News Print Service Bureau of New York, in a recent address at the Cosmos Club before the Washington Section, Society of American Foresters.

"The paper industry in the East is facing two alternatives—(1) the utilization of tree species other than those now commonly made into pulp and (2) the growing of pulp wood—and it will have to accept both. For the practical application of these principles the industry must turn to professional foresters for assistance.

Magnitude of the Industry.

"A survey of the situation shows the urgent need of immediate and large-scale efforts to provide a permanent supply of raw material for the basic industry of paper making. To say that the United States last year produced 3,800,000 tons of wood pulp means little to the ordinary reader, but the problem takes on a more concrete aspect when it is realized that 6,000,000 cords of wood, chiefly spruce and hemlock, were used to make this quantity of pulp. The magnitude of the industry is also more fully appreciated when it is known that the United States in 1920 produced 7,830,000 tons of paper, or 147 pounds per capita.

"This is truly a paper age, and even more truly a newspaper age. Just 217 years ago the first newspaper in America was printed; to-day our daily papers have a circulation of more than 28,000,000 copies. There are 60 dailies whose circulation exceeds 100,000 copies, and one Sunday paper claims more than a million circulation. To most readers a newspaper is a thing to be hastily scanned and thrown away, and the man who runs while he reads never stops to think what a wonderful coordination of service, from lumberjack to newsboy, is required to produce and give him, for 2 or 3 cents, an up-to-the minute résumé of the world's happenings in politics, industry, science, and education. Still less does he realize that the newspaper which he holds in his hand is a 100 per cent product of the forests of our country, since wood fiber is the only constituent of newsprint paper. This is why the forestry problem touches so intimately every man, woman, and child in the United States, whether he realizes it or not.

"The best we can hope for is a pretty severe stringency during the period between the complete exhaustion of the present supply of pulp wood and the coming on of the new supply brought about by general forest protection and reforestation through the cooperation of National, State, and private agencies.

Future Supply of Raw Material Big Factor.

"On account of the tremendous investments required in the development of pulp and paper plants, manufacturers must of necessity figure on an operation of 40 years or more in order to bring their overhead charges down to a reasonable factor in production cost. This is the reason why the industry must take a long look ahead in providing for its raw material.

"Professional foresters can, with some degree of confidence, estimate the cost of growing pulp-wood stumpage in the Northeastern States at $10 per cord; and anyone familiar with timber conditions in these States will have no hesitancy in saying that such stumpage will be worth more than this amount long before it can be grown.

"This is the real basis for the belief on the part of foresters that the time has now arrived when they can demonstrate to hard-headed business men that in forestry, and not in destructive lumbering, lies the future of the great industry of paper making."

MANY WAYS TO USE PEANUTS DESCRIBED IN NEW BULLETIN

Peanuts are a drug on the market just now. That's because they are not eaten largely in cold weather, but with the coming of the robin, which is a harbinger of spring, circuses, and the opening of summer resorts, peanut slippers look for increased consumption, which may mean higher prices. In round figures, 900,000,000 pounds of peanuts are grown in the United States every year and 100,000,000 pounds were imported from Asia last year. About 50,000,000 pounds of roasted peanuts are consumed annually, say marketing experts of the Bureau of Markets, United States Department of Agriculture.

Few of the fond papas and mammas who buy Johnnie or Mary a bag of peanuts at the circus know that more than 100 different methods of utilizing peanuts, including the making of fancy dyes and wood stains, peanut milk, coffee, and ice cream have been devised, although few of these products are sold commercially. But peanut oil, peanut candy, peanut butter, salted peanuts, peanut cookies, roasted peanuts, and peanuts in a number of other forms run up the annual American per capita consumption to 3½ pounds. Every time certain soaps are used the consumer is partaking of his 3½ pounds.

Fully half of the peanuts grown in the Southern States are fed to hogs. Large quantities of peanuts are exported also, 1,074,007 pounds having gone out of the country during the month of January alone. Of this quantity, 78 per cent went to Canada, where the peanut enjoys copopularity with the clove. Cuba took 14 per cent, Jamaica 2 per cent, and Bermuda 1 per cent.

STATE COLLEGES NOW OFFER MARKET COURSES TO FARMERS

A big, expensive obstruction will be taken out of the road that leads from producer to consumer when the Bureau of Markets, United States Department of Agriculture, extends marketing science to the agricultural educational agencies as is now proposed. In growing his crop the farmer has done only half his work; his own profits and the satisfaction of his customers are not assured until the product has been marketed efficiently. For seven years the Bureau of Markets has been collecting information upon this subject, and this material has now been boiled down into such shape that it may be taught in schools and colleges along with the other specialties and sciences that go into the profession of agriculture.

The Bureau of Markets will not attempt to create new educational agencies, but will use those already provided. Schools and colleges will be given an opportunity to offer marketing courses to their students, and moving pictures, lectures, and pamphlets will carry the information to those who are unable to attend regular institutions.

The subjects now ready for such extension include organization methods and business methods for cooperative associations, the standardization of farm products, better packing and shipping, transportation, market inspection, market information, exhibits and demonstrations, and warehousing. Practically all the farmer's marketing problems are reached by these subjects, but in cases which require it, the subjects will be modified and specialized to suit particular needs.

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SEED BUYERS SHOULD SHUN CLOVER-TIMOTHY MIXTURES

So-called clover-timothy seed mixtures, which are widely advertised by certain seed firms at what may appear to be attractive prices, often contain so little alsike or red clover that they are of little, if any, more value than timothy seed, but actually cost nearly double the market price of that seed, say specialists of the United States Department of Agriculture. These mixtures are usually offered by the bushel, followed by the qualifying statement that a bushel weighs only 45 pounds.

In other words, this seed is offered as clover and timothy with the claim that the different seeds occur in the proper proportions for seeding, while frequently there is not more than 5 or 6 per cent of clover present—not enough to be of any value in the crop.

Persons who buy mixed seed can not be too careful to learn the exact proportion of the mixtures they get and the quality of the seed composing them. Otherwise, they are likely to pay an exorbitant price for seed that will not give the crop wanted.

FEDERAL MARKET REPORTS HELP STRAWBERRY GROWERS

With the commercial strawberry season beginning in Louisiana, the Bureau of Markets of the United States Department of Agriculture is turning its marketing machinery to the aid of the growers in disposing of their crops at the best prices and in the best markets. A specialist of the bureau was recently sent to Louisiana for this purpose.

Through its market news service, the bureau will keep him daily informed of conditions at the various strawberry markets of the country—latest price quotations, volume of sales, amount of berries on the way to each market, and many other factors that influence marketing. From this information the specialist can form an accurate estimate of conditions at each of the points. He will disseminate this information among the shippers of the region and advise them as to what market appears to be the most promising. In this way shipments may be diverted from overcrowded markets, sending them to those where the demand is better, and consequently better prices prevail.

As the strawberry season advances this specialist will follow the crop. When the Louisiana crop is marketed, that in western Tennessee will be coming in, and the specialist will move to that State and perform the same service for the growers there. Eastern Tennessee, Arkansas, and probably Missouri strawberry sections will be given like assistance. Formerly agents were sent to other points as well, but this year lack of funds has forced the bureau temporarily to curtail its service. Similar aid is given producers of other crops.

GOVERNMENT RELEASES TEXAS FROM SHEEP-SCAB QUARANTINE

A new quarantine order issued by the United States Department of Agriculture releases the entire State of Texas from quarantine for sheep scabies. The order becomes effective April 15, 1921. Texas counties which until recently have been subject to quarantine regulations and which are now released are: Concho, Crockett, Edwards, Kimble, Menard, Pecos, Schleicher, Sutton, Terrell, Tom Green, and Valverde.

According to veterinarians in the Bureau of Animal Industry, there are a number of cases of sheep scab still existing in Texas, but the disease is so well under control that a continuance of the quarantine in the "Lone Star State" is considered no longer necessary. According to the new order promulgated by the department, the following areas of the United States are still under quarantine:

California: Mendocino, Sonoma, San Joaquin, Stanislaus, Fresno, Merced, Madera, Tulare, King, and Kern Counties and the island of San Clemente.

Louisiana: The parishes of Allen, Beauregard, and Vernon.

Sheep may be shipped, transported, or otherwise moved from the quarantine areas to any other part of the country only in accordance with the regulations of the Secretary of Agriculture for the prevention of the spread of scabies in sheep.

HELP GET THE LAST TICK BY KEEPING DIPPING VATS BUSY

Thousands of cattle are being sent splashing through the dipping vats this month in many sections of the Southern States in what appears to be one of the last attacks on the cattle tick. Two years ago the slogan adopted by the United States Department of Agriculture was "Dip that Tick in March." This year it is "Help Get the Last Tick," and the fight is being waged particularly in the territory recently released from quarantine.

There is only one effective way of getting rid of ticks—that is to dip the cattle. Early dipping is urged by the department specialists. Two ticks in March, allowed to live and prosper, mean thousands at least in June, and millions soon afterwards, specialists say. Seed ticks hatched from the eggs laid the previous fall become active during the first warm days of spring. If allowed to live, they suck cattle blood until they are full grown.

One female tick shortly after she has left the egg stage becomes able to lay from 3,000 to 5,000 eggs. These eggs within a short time hatch into seed ticks, and each female in her turn lays from 3,000 to 5,000 eggs. It is clearly evident, therefore, that if the ticks can be killed in early spring, hosts of blood-sucking parasites will be prevented from taking an enormous toll later in the season.

VIOLATIONS OF GRAIN STANDARDS ACT.

Investigations of the practices of the Samuel Hastings Co., Cairo, Ill., by the Bureau of Markets, United States Department of Agriculture, discloses 11 violations of section 5 of the United States grain standards act as appears in the recently published findings of the Secretary of Agriculture. Publication of findings is the only penalty provided under the law for violations of section 5.

In three cases the licensed inspector's certificates forwarded to the consignees had been altered to show a different grade of oats than that determined by the inspector, and in the remaining eight cases the oats were, by means of invoices sent to the consignees, represented to be of the quality stipulated in the contracts, whereas in each case the licensed inspector had found them to be of lower quality and had so stated on his certificates.

Live-Stock Shipment to South America Involves Considerable Routine Details

The American purebred live-stock trade with South America during 1920 amounted to nearly $700,000 as a result of activities of the United States Department of Agriculture in cooperation with individuals and breed associations, according to specialists of the Bureau of Markets. While South America offers an excellent opportunity for marketing live stock, the process is highly complicated, and breeders contemplating entering the export business should not only take all the short cuts possible, but should be careful that no essential step is overlooked.

Exporting purebred live stock to foreign countries is a comparatively new enterprise for most American breeders. Recently, however, there has been a marked increase in trade of this sort, and correspondingly greater interest on the part of breeders in the possibility of further developing foreign outlets for America's surplus live stock.

Permanent Officer in Buenos Aires.

During the past three years several investigators have been sent to South America by the United States Department of Agriculture for the purpose of ascertaining and developing foreign markets for American purebred animals. Recently a representative to act as agricultural trade commissioner, with permanent offices in Buenos Aires, was sent to Argentina.

The conduct of such export business, however, involves considerable machinery, and certain routine details must be given attention if the transaction is to prove satisfactory to either the buyer or the seller. Among the features which the bureau's specialists urge should be given careful attention are: Number of animals to be shipped; space on boat; date and hour of sailing; port of embarkation; cost of rail and water freight; building of stalls on boat and proper size of stalls; number of attendants permitted; whether attendants will be allowed free return passage; insurance; tuberculin test; registration; viséing of all documents by foreign consul; marking, tagging, and photographing of animals; billing; passports for attendants; equipment for caring for animals; feed in transit; quarantine regulations at port of arrival. In addition, at least eight different documents, such as tuberculin test, general health, registration, service, transfer, and export certificates, must be obtained and each properly filled out and authenticated.

Approximate Cost of Shipping.

The total cost of shipping live stock from the corn belt via New York to Brazil, Uruguay, and Argentina is approximately as follows: Cattle, $350; horses, $400; hogs, sheep, and goats, $225. These figures are based on a shipment containing a minimum of 50 animals. Where only two or three animals are shipped the expense is likely to be higher. Total expenses per head of a general shipment from the time the boat docks at the port of destination until the stock is sold will be approximately as follows: Cattle, $85 to $95; hogs, sheep, and goats, $20 to $25.

The Bureau of Markets has compiled data regarding the various steps necessary for exporting live stock from the United States to various South American countries, together with approximate costs. This information will be sent to interested parties on request.

FARMERS SHOULD NOT PLANT IMPORTED SOY BEAN SEED

There is a sufficient supply of American-grown soy bean seed of proved varieties to plant a greatly increased acreage. The United States Department of Agriculture, therefore, feels warranted in recommending that farmers under no circumstances plant their fields to imported soy bean seed.

The attention of the department has been called to the presence on the market of imported soy bean seed for planting purposes. This is exceedingly undesirable as the varieties grown in oriental countries are very numerous, and the majority of the varieties are not nearly so productive as those commonly grown in the United States. The Department of Agriculture has tested over 1,000 introductions from various parts of the Orient, and the majority of these are much inferior to the best varieties grown in this country. Imported seed usually is a mixture of varieties, even if the seeds be apparently the same.

In the Orient the small grower sells his crop to the small town buyer, who in turn sells the seed collected from many growers to the merchant at the nearest railway point. All such seed is classed merely as yellow, black, green, or brown, no attention being given to the numerous varieties having similar seeds. It will be seen readily that the shipper at the seaport will have a considerable mixture of varieties in the different color groups. Quite recently from a small package of imported yellow beans, 18 different sorts were selected by seed characters.

Any farmer planting such seed is taking an unwarranted risk, and the chances are practically certain he will have the experience reported by a Massachusetts farmer who planted a 4-pound package of imported soy bean seed in 1920: "I found that there was almost every known variety of soy bean in that package. At harvesting some were dead ripe, others in all stages to those that were just setting pods. Some were low growing, and from this all the way up to those that would have climbed a 10-foot pole."

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended March 26, 1921:

Diseases of Sheep. Farmers' Bulletin 1155.

Growing Annual Flowering Plants. Farmers' Bulletin 1171.

Raising Sheep on Temporary Pastures. Farmers' Bulletin 1181.

The Southern Pine Beetle. Farmers' Bulletin 1188.

Handling Spinach for Long-Distance Shipment. Farmers' Bulletin 1189.

How to Grow an Acre of Potatoes. Farmers' Bulletin 1190.

The Distribution of Northwestern Boxed Apples. Department Bulletin 935.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1155; Department Bulletin No. 935; Department Circular 145.

Agriculture has made great advances in modern times, but the advice of Pliny the Elder, who lived 20 centuries ago, is still good for gardeners: "Dig deep, manure well, work often."

The same kind of vegetables should not be grown twice in succession in the same part of the garden, if this can be avoided. If a radically different kind is grown disease spores and insects, though present in the soil, are not so liable to attack the second crop.

HOME GARDEN HINTS—HOW TO GROW VEGETABLES

Give Crops the Start They Require in Order to Produce Good Yields—Follow Uncle Sam's Rules and Have Fresh Vegetables All Summer—Spare Time Spent in Gardening Promotes Health and Reduces Living Costs

Points on Potato Growing That Will Bring Success if Followed

Irish potatoes are grown in most home gardens, but there are just a few points in the potato-growing game that the home gardener is liable to overlook and which are important, garden specialists of the United States Department of Agriculture say. First of all, potatoes grow quickly, and their food supply must be all ready and waiting for them in the soil. Second, they are heavy feeders and want plenty of plant food to draw upon. In other words, the soil for Irish potatoes must not only be rich but especially so in certain kinds of plant food. Land that was well manured the previous season and which contains plenty of organic matter is best. The first step in preparing the soil will be to spade or plow it to a depth of 8 or 9 inches, then break up the clods, if there are any, and pulverize the soil practically as deep as it is spaded or plowed.

Commercial fertilizers give good results for growing potatoes, especially if the fertilizer contains potash, as potatoes require more potash than is usually present in the soil. Fertilizer manufacturers mix special brands for potatoes, and these are generally rather rich in potash. How much fertilizer to use will depend upon the fertility of the soil, but, as a rule, 8 pounds to each 100 feet of row will be about right. A good way to apply fertilizer is to scatter it in the freshly opened furrows, then drag a hoe through it several times to mix it with the soil.

Another method is to scatter the fertilizer in the furrow and mix it with the soil before dropping the pieces of seed potato.

Good Seed Important.

Small, shriveled potatoes, left in the bottom of the barrel at the end of winter are not fit for seed. Only plump, disease-free potatoes, on which the sprouts are just beginning to start, should be used for seed. Seed grown in Maine, New York, Michigan, Wisconsin, or some other special seed-producing section will, as a rule, give best results. Seedsmen get the seed potatoes shipped in by the carload and then sell them to gardeners in small quantities. It takes about 10 bushels (600 pounds) of seed potatoes to plant an acre. One bushel of seed will plant one-tenth of an acre, which is a space approximately 43 feet wide by 100 feet long. A peck of seed potatoes (15 pounds) should plant 360 feet of row, each potato being cut into chunky pieces having at least one good eye to a piece.

Seed potatoes should not be cut until all ready to plant. Whenever seed potatoes are cut and allowed to stand the cut surfaces dry out, turn black, and the seed loses vitality very rapidly. Scabby or diseased seed potatoes should not be used for planting. The variety of potatoes to plant will depend largely upon locality. Irish Cobbler is one of the leading early varieties in the eastern section of the United States, Early Ohio in the Central or Middle West States, and Triumph in the Southwestern States. The Rural and Green Mountain are the leading late varieties in the northeastern United States and the Burbank and Charles Downing (Idaho Rural) in the Western States. Plant the variety most commonly grown in the locality, but be sure that the seed is free from disease and is in good, sound condition.

Do not plant potatoes too deep, 4 inches being about the proper depth. Leave the surface almost level and see that there are no clods, stones, or pieces of sod directly over the hills. Potatoes are one of the first garden crops to plant in the spring, and it is safe to put the seed in the ground two or three weeks before the date of the last heavy frost. In case there should be a freeze after the plants come up, cover them with an inch or two of loose earth to protect them. They may be uncovered as soon as the weather warms up or they come up through the soil themselves.

Don't attempt to grow a garden under or near large trees that will not only shade the crops but in addition draw most of the moisture and plant food from the soil.

Coal ashes have little value as fertilizer, their use being mainly to loosen the soil and make it more workable. They are most valuable on heavy clay soil, but should be screened to take out coarse material before they are applied, and should be spread evenly over the surface and thoroughly mixed with the soil. Wood ashes have fertilizing value, but should be applied before they become leached.

Spraying is Most Effective for Killing Insect Pests

Spraying, compared with its cost, is one of the most profitable forms of orchard work, and one of the most likely to be neglected or misdirected, according to specialists of the United States Department of Agriculture. There is need that fruit growers have a more intimate knowledge of spraying materials, spraying machinery, and especially the whys and wherefores of spraying. The up-to-date orchardist must know just what each spray application will do and the proper time and method for applying it.

Necessary to Know How Insects Feed.

A better knowledge of the life and habits of the more common insect pests and of the nature of insecticides will add much to the efficiency of control measures. The general character of sprays to be used depends on the character of the mouth parts of the insects.

Broadly speaking, all insects secure their food in one of two ways: (1) By actually biting out and swallowing portions of the food material; (2) by sucking out the juices. The first type includes caterpillars or the larvæ of moths and butterflies, adult beetles and their grubs, grasshoppers, crickets, sawflies and their larvæ, bees, etc.

All biting insects are subject to destruction by arsenicals or other stomach poisons. Some biting insects, however, such as borers and certain root-infesting forms, do not feed in situations where poisons may be applied, and for these a different treatment is necessary.

Among sucking insects may be listed plant lice, scale insects, leaf hoppers, the pear psylla, and the true bugs, all very important enemies of the fruit grower. For their control the so-called contact sprays are used, sprays that corrode the body or permeate the breathing spores of the pests or otherwise effect their destruction.

Biting and sucking insects often occur in a way to permit their destruction by poisoning the air which they breathe, as with hydrocyanic-acid gas or carbon disulphide, but in many cases the expense and danger make this method impracticable.

Summer spraying is directed against bud, leaf, and fruit eating insects, and

for these arsenicals chiefly are used. Dilute contact insecticides are also employed in the control of certain insects, such as aphids, red bugs, leaf hoppers, etc.

The arsenicals in most common use are arsenate of lead, Paris green, and arsenate of lime, used as strong as the foliage will stand. The foliage of stone fruits, as cherry, plum, and peach, is on the whole quite tender, and on these arsenicals must be employed with caution.

The important insecticides may be grouped principally into these three series:

Stomach poisons for biting insects—arsenate of lead, Paris green, arsenate of lime, arsenate of soda, arsenite of lead, arsenite of lime, arsenite of soda, Scheele's green, London purple, white arsenic, hellebore, etc.

Contact sprays for sucking insects—lime-sulphur solution, self-boiled lime-sulphur mixtures, fish-oil soap wash, kerosene emulsion, crude-petrolium emulsion, distillate emulsion, nicotine solution, pyrethrum, caustic soda, caustic potash, carbolic-acid emulsion, sulphur spray, resin, resin wash.

For fumigating, the specialists recommend hydrocyanic-acid gas, carbon disulphide, or sulphur dioxide. These are effective against all classes of insects when it is desirable to use them.

Arsenate of Lead Most Widely Used.

Arsenate of lead is the best known and most extensively used stomach poison for insects. It has a wider range of usefulness than has any other internal poison now available. It is safe for use on the foliage of most plants, has good adhesive qualities, and owing to its fineness, remains in suspension well in water. Moreover, it can be safely combined with certain contact sprays, as nicotine, kerosene emulsion, soaps, etc., and with a number of fungicides such as lime-sulphur mixture, and Bordeaux mixture. It should not be combined with sodium or potassium sulphides.

Commercial arsenate of lead may be obtained as paste or powder. Powder is coming into extended use by reason of the convenience with which it may be handled and stored, and the saving in freight by the absence of water. Paste arsenate of lead, however, may be stored from year to year if properly covered with water to prevent drying, and protected from freezing temperatures.

This method for home-made preparation of arsenate of lead will give a good product without any material waste of chemicals, and will require a minimum amount of time. For every pound of lead arsenate it is desired to make, use either of these:

Sodium arsenate (65 per cent) (ounces)	8
Lead acetate (sugar of lead) (ounces)	22

Or this formula:

Sodium arsenate (65 per cent) (ounces)	8
Lead nitrate (ounces)	18

Information touching methods of spraying, and directions for using the various preparations are contained in Farmers' Bulletin 908 which may be obtained free upon application to the Division of Publications, United States Department of Agriculture.

MAKE PLAN ON PAPER BEFORE PLANTING THE GARDEN SEEDS

A definite plan for the garden should be drawn on paper before any planting is done, suggest garden specialists of the United States Department of Agriculture. First determine the exact dimensions of the available land; then ascertain which parts of the garden will be best adapted to certain crops, especially those that require a large amount of sunshine. Outline the garden plan on paper and sketch in the crops that are to be planted upon each part.

In planning the garden it should be borne in mind that certain crops, such as lettuce, radishes, and early beets, can frequently be grown in the same rows with other crops and be removed before the main crop attains sufficient size to require the entire space. It should also be remembered that carrots, beets, salsify, early turnips, parsnips, and all crops of that type may be grown in rows 12 to 18 inches apart and will occupy a comparatively small amount of space if grouped together. The taller growing crops, such as pole beans, tomatoes trained to stakes, and sweet corn, should be planted at one side of the garden where they will not shade the smaller crops.

Arrange Rows for Convenience.

It is generally conceded that the rows should run north and south; however, it is more important to arrange the rows for convenience of cultivation than for exposure to the sunshine.

Due consideration should be given to both companion and succession cropping. By companion cropping, the plan of planting two or more crops together and removing those that mature first is followed. By successive cropping one crop follows another, keeping the land fully occupied all the time. Thus, early cabbage may be followed by celery or late tomatoes; early corn or early Irish potatoes may be followed by turnips, late beans, late beets, or late cabbage. The arrangement of crops, however, depends somewhat upon the locality and length of the season.

Detailed directions for locating and planning gardens are contained in free bulletins of the United States Department of Agriculture, which will be sent upon application to the department.

MANY WASHINGTON GARDENERS BEGIN BUSY SEASON EARLY

Organized garden work in the District of Columbia has begun this season with more interest than in any previous year, according to the District Agricultural Agent, who is a garden specialist in the United States Department of Agriculture and who is cooperating with the Agricultural Council for the District of Columbia in organizing and supervising the garden work. The members of the East Potomac Garden Club—one of the garden projects in the District—last year cultivated 700 gardens and produced crops valued at market prices at $60,000. This year there will be approximately 750 gardens in this club, more than 700 of which have already been assigned.

About 75 per cent of those who had gardens last year have asked for the same space this season, and many new gardeners have been enrolled. Last year the garden enrollment continued through the spring until as late as June, but this year practically all available space was assigned by March 15.

Hundreds of gardens in the District do not come to the attention of the District Agricultural Agent, but in 1920 he had supervision over approximately 1,000 gardens which produced crops valued at $81,300. Colored people in the District produced more than $6,000 worth of vegetables last year. More than 100 acres have been laid out in gardens for use this year in the District and it is believed by the District Agent that every garden space will be assigned before the spring planting season is far advanced.

BUSH VELVET BEAN MEETS WITH FAVOR.

Reports from 400 cooperators of the United States Department of Agriculture who tested bush velvet bean in 1920 for the first time are highly commendatory. Three-fourths of those reporting consider the bean a marked success, and over half of them believe it to be superior to any other variety, everything taken into consideration. Two uses of the bean meet with particularly enthusiastic praise. First, is its use in corn, where its non-twining habit is very desirable, as it does not pull the corn down and make harvesting difficult, as do the twining varieties. Second, it is found ideal as a cover and green manure crop in citrus orchards, being far superior for this purpose to any other legume yet found. Its use should considerably reduce the fertilizer bill for citrus orchards.

Delay in Treating Hogs Exposed to Cholera May Result in Heavy Loss

Unless early action is taken to diagnose the cases and apply proper treatment when disease appears in their swine herds, losses are inevitable. The chances are many that the trouble is cholera, and under such circumstances delay is dangerous, for when that disease has spread and progressed in the herd the loss of many hogs may be expected.

Early attention in an outbreak of hog cholera is essential for the successful treatment of the herd. It has been told repeatedly that anti-hog-cholera serum is not a cure; its use is primarily intended as a preventive agent against cholera, and as such it is universally recognized as the only reliable treatment. While the serum seemingly has had some favorable effect when administered to sick hogs in the very early stage of the disease, swine owners should not depend upon the product to save any number of animals after they have developed visible symptoms of hog cholera.

Serum is Mainly a Preventive.

In Farmers' Bulletin 834 (revised) attention is called to the fact that the serum is most efficacious when administered as a preventive. "While the serum is regarded as most efficacious when administered as a preventive," the bulletin points out, "it seems to have some curative value, provided it is administered when hogs are in the very early stage of the disease. But very little benefit can be expected from the treatment of hogs that are visibly sick."

"Serum should be used with the understanding that it is a preventive rather than a curative agent." It has been stated that serum alone has some value in treating sick hogs. This is true within a certain limitation. Ordinarily it is efficacious only in the very early stage of the disease, before the hogs show visible signs of sickness."

In a bulletin issued recently by Dr. R. C. Reed, Chief, Animal Industry, Maryland State Board of Agriculture, appears the following: "An analysis of the data obtained from sick herds, vaccinated in Maryland during 1919, shows that over one-fifth of the swine had died or were too sick to treat before the herds were immunized." Information from other States where control work is being conducted points to a similar lack of prompt attention in reporting outbreaks of hog cholera.

Inoculate Swine at First Sign of Cholera.

Much of the criticism and unfavorable comment against anti-hog-cholera serum are due to the fact that farmers delay the use of the product for too long a period after cholera has reached the herd. When many of the animals show symptoms of the disease and the temperature reveals a high fever, it is not reasonable to suppose that serum will do much toward limiting losses. Therefore, the warning is again given to treat the animals at the very first sign of cholera in the herd.

Or better still, if there are reasons to suspect that the hogs have been or are exposed to infection, they should be immunized before they have fallen victims. In sections where there are no known outbreaks of cholera there does not seem to be any need for the use of an expensive treatment, but when the disease makes its appearance in the vicinity no time should be lost in having all susceptible hogs given the serum treatment.

Reports indicate that farmers and swine owners are remiss in guarding against the introduction of infection, and are generally inclined to expect too much of anti-hog-cholera serum as a curative agent.

Copies of Farmers' Bulletin 834 may be had free upon application to the Division of Publications, Department of Agriculture, Washington, D. C.

Soil in the garden should be rich and well supplied with humus. Stable manure is best for the garden, for it furnishes both plant food and humus.

As a rule, foliage crops, such as lettuce, kale, and spinach, do fairly well in partial shade, but must have a minimum of three hours of sunshine a day. Plants that ripen fruits, such as tomatoes and eggplant, should have a minimum of five hours of sunshine each day.

THE MEAT SITUATION SHOWED RADICAL CHANGE LAST YEAR

(Continued from page 1.)

here, since according to figures previously published the average Briton consumes relatively about seven times as much mutton and lamb as the average American, while the average for France is nearly four times as much.

Consumption of mutton and lamb in the United States is only about 6 pounds per person per annum and is very small compared to beef and pork. It is smaller even than veal, of which about 8 pounds per person is consumed.

Pork Exports Slump.

Pork production in 1920 fell considerably below the high record made in 1919, when marketings were unusually large owing to the high prices prevailing during a part of that year, including the highest ever paid for live hogs. Nevertheless, the consumption of pork was slightly greater in 1920 because of the heavy decrease in exports. The exports of bacon and hams fell off more than one-half, the totals for these two items in round figures being 1,787,000,000 pounds sent abroad in 1919 and 822,000,000 in 1920. The exports of lard, however, almost held their own, decreasing only 20 per cent. This was because Germany, our second-best customer for this commodity, was again in the market for quantity and took 128,000,000 pounds, which was within less than 1,000,000 pounds of the total taken by United Kingdom, always the chief consumer.

The highest recorded production of all meats combined occurred in 1918, when slightly over 18,000,000,000 pounds (excluding lard) was prepared for home consumption and export. In the two succeeding years the production declined at the rate of 1,000,000,000 pounds a year. Owing to decreased exports the consumption in 1919 and 1920 was nearly stationary. The following table shows the estimated annual consumption of each kind of meat per head of the population for the last five years:

Estimated Per Capita Consumption on Each Kind of Dressed Meat and Lard in United States, Calendar Years.

Class.	1916	1917	1918	1919	1920
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
Beef	58.1	62.0	67.8	60.0	56.4
Veal	5.3	6.5	7.0	8.1	8.5
Mutton and lamb	6.2	4.7	5.0	6.0	6.1
Goat meat	.2	.2	.2	.1	.1
Pork (excluding lard)	75.7	58.4	72.5	76.3	71.0
Total meat	145.5	131.8	152.5	144.5	142.1
Lard	15.1	11.7	14.8	12.7	12.2
Total meat and lard	160.6	143.5	167.3	157.2	154.3

There is no general rule regarding the depth of planting, as different kinds of vegetables and different soils necessitate different practices. The smaller the seeds the shallower the covering should be as a rule. In heavy soils the covering should be lighter than in light soils.

Every member of the family requires nearly 1,100 meals annually. How many of these are coming from the home garden this year?

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Weekly News Letter

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Secretary Wallace Wants Protection for Products of Agriculture

Restoration of Former Import Duties Will Not Be Sufficient.

Sees Conscious or Unconscious Laying of Foundation for New National Policy Within Next Six Months.

During the next six months we shall either consciously or unconsciously lay the foundation for a national policy. What we do during this period is very likely to determine, in a large way, whether we shall make of ourselves a "self-sustaining, independent, self-reliant Nation agriculturally, industrially, and politically," as President Harding expressed it in one of his speeches, or "whether we shall continue to exploit our agricultural resources for the benefit of our industrial and commercial life." Present troubles are greatly aggravated by unprecedented conditions both at home and abroad. Nations which used to buy most of our surplus, paying us in goods which did not seriously interfere with our own enterprises, are in bad condition financially. They owe huge sums of money to us and to their own people. They need all the money they can raise to rebuild their own industries. They are making desperate efforts to grow their own food; consequently they are buying as little as possible from us and are trying to sell us as much as possible. They want to send us goods to meet their payments of interest and principal and to pay for what they now buy. They must follow this policy; their salvation depends upon it. They will compete with our industries both in our own markets and in other markets which can use the sort of goods they produce.

Must Consider Nation as Whole.

Our own manufacturers see the danger to them in this situation. They see competition becoming more and more severe. Naturally and properly they are laying plans to meet it in every way they can. They want a tariff which will give them protection against cheap foreign goods. They want to cheapen their own cost of production in every way possible, and therefore are anxious to keep down the price of food products and raw materials. Further than that, our own manufacturers will be wanting to extend their foreign markets as far as possible, especially during this period of financial stress at home. If they can send shiploads of their manufactured goods to the great food-producing countries to the south of us and bring back these ships loaded with food products produced on cheap land and with the cheapest of labor, that would seem to them to be good business. But if we look at the interests of the Nation as a whole, and, indeed, if we take the long view of the future welfare of our great industrial and manufacturing re-

(Continued on page 13.)

EXTRACTS FROM SECRETARY WALLACE'S STATEMENT.

This Nation can not afford to permit the breaking down of its own agriculture, even if for a time we can buy food and other farm products cheaper from some one else.

We can not under any circumstances afford to permit the present discouraging conditions to continue and result in greatly decreased production, because that decreased production may mean exorbitantly high prices within a few years.

We have not considered as we must the heavy additional burden imposed upon producers by the increased freight rates and the large increase in other marketing charges. These increased rates are a differential imposed upon our own producers and to the benefit of our foreign competitors.

Practically all agricultural products should at once be given adequate protection against foreign competition. There is some talk of reestablishing the old import duties on farm products. In many cases those duties, if added, would not equal the extra cost of marketing. To any rates which may be levied now should be added an amount equal to the extra freight charges in getting products to the consuming centers.

The sooner we get down to studying this whole national situation the better it is going to be for all of us. It is even more important to the industrial sections that our agriculture be put upon a thoroughly sound foundation than it is to the farmers themselves.

MILK SITUATION APPROACHES PREWAR SUMMER SURPLUS

Condition Likely to Exist in Well-Developed Dairy Districts During Early Summer.

Falling Off in Demand of Whole Milk for Manufacture—Producers Advised to Use More and Feed Surplus to Calves, Pigs, and Poultry.

For the first time since the beginning of the World War there is developing in this country a surplus of milk, according to reports recently received by the United States Department of Agriculture. Specialists of the department state that this condition probably will be only temporary during the "flush" of the season, and that it is most apparent in well-developed dairy districts. It may continue during the summer months, but is expected to adjust itself by fall, when demand will overtake the surplus of supply. The situation is largely due to the falling off in the demand for milk in the manufacture of condensed products, milk powders, casein, and similar products, for which there was a large export outlet.

Increased Human Utilization Advised.

The department points out the advisability of using as much milk as possible, in fluid form and otherwise, as a human food. Within the last generation an increased knowledge of the value of milk in the diet has resulted in an almost doubled per capita consumption of milk, and consumers who purchase milk freely thereby encourage production. This is believed to be the best safeguard against a milk shortage and high prices resulting

from the withdrawal of dairymen from the business during periods of large production and low farm prices for milk.

But when the limit of human utilization is reached dairy producers necessarily must decide how to dispose of the remainder. In many cases this will be a decision between selling whole milk, selling cream, or even to use a moderate quantity of whole milk for feeding, especially to young animals. In any event, a more liberal use of milk on farms should reduce the surplus, even though not solving the problem entirely.

Directions for Feeding Milk to Live Stock.

As a guide to persons deciding to utilize surplus milk as a live-stock feed, the department makes the following recommendations, which may be supplemented with literature issued by the department:

Milk from a dairy herd which is not definitely known to be free from tuberculosis should be scalded before being fed. An ordinary feed cooker is a practical means for scalding milk. This process is approximately equivalent to pasteurization, which most large cities require as a safeguard to public health. Metal pails that can be kept clean by washing and scalding are preferable to wooden containers or others that are difficult to clean.

In calf feeding it usually pays well to feed 1 pound of whole milk for each 10 pounds that the calf weighs, for a period of two weeks, and at the end of that time to change gradually to an equal amount of skim milk. The skim milk should be gradually increased as the calf grows until about 15 pounds per day is fed at the end of three months. Feed the milk warm and regulate the quantity according to size and vigor of the calf.

For pigs 3 weeks old or more 3 parts of skim milk mixed with 1 part of shorts is useful in keeping them growing. Skim milk may be fed with corn and other hog feeds in various practical combinations.

Feeders Can Buy Commercial Product.

In poultry feeding both skim milk and buttermilk are excellent feeds, and can now also be purchased as a nonperishable commercial feed, which is sold in large barrels as semisolid buttermilk. Skim milk and buttermilk may be fed alone or mixed with other feeds, but feeders should observe their flocks carefully to avoid giving too much milk, or bowel trouble may result. This is caused principally by fowls eating spoiled clabbered milk remaining from a previous feeding.

For horses, milk may be fed in quantities up to 3 or 4 gallons a day, and even in clabbered condition it is not harmful. Some horsemen prefer milk slightly sour, on the ground that it is less likely to result in gas formation. As a horse feed, milk is palatable, easily digested, and valuable for fattening. Horses that have never been fed milk, quickly learn to like it if a little grain is sprinkled in it.

While to live-stock owners unaccustomed to the use of milk as a stock feed it may appear somewhat expensive, there are advantages which milk feeders quickly recognize. In addition to utilizing the surplus milk that would otherwise be wasted, young stock generally make a very rapid growth. This means early maturity and early usefulness, compared with stock that have developed more slowly. At least as a temporary measure there is a real opportunity to improve farm live stock, in addition to relieving a local milk surplus, by using skim milk rather liberally in proper combination with other feeds.

Loss from Spurious Pea Seed Last Year Prompts Department to Issue Warning

Farmers buying seed peas for this year's planting, and more especially canning factories and large growers contracting for their next year's seed, are advised by the United States Department of Agriculture to go directly to seed growers wherever possible or to buy their seed of dealers of known responsibility. The rag-doll germinator test, which promises to become universal in the testing of seed corn for diseases and reproductive ability, can also be used to test the germinating qualities of peas and beans, but beyond that the purity of the variety is of first importance.

Unsuitable for Canning.

Canners in Maryland and Delaware learned this to their cost last year, as about 1,700 acres, 30 per cent of the total pea crop for canneries, was planted with seed that proved to be spurious. The department has recently conducted an investigation of the substitution. The Alaska variety is generally used for canneries in these States. The Alaska grows a vine about 30 inches high, with pods beginning to form at the sixth or eighth joint, giving early development and a uniform time for maturity. The latter qualification is important, as farmers nowadays mow the peas instead of picking them, and all that are not in a stage for use at the time of mowing are a total loss. These pea vines are then run through a machine called a viner, which delivers the peas ready for factory processes.

The Alaska also is a white-flowered pea, and any except white-flowered peas darken when processed for canning, thereby deteriorating the packed product. The spurious variety sold as Alaska grew to a lenth of 5 or 6 feet, and did not begin to bloom until it had made considerable growth. It then set pods through a long period, finally having the whole range from blossoms to dry pods, but at no time having a satisfactory yield of peas at the right stage for canning. In addition, many of the pea vines bore colored flowers, and when processed the peas from these turned dark and stained the liquor to almost an inky hue, giving the buyer or consumer the impression that the product was unclean or spoiled.

The department found that the objectionable peas came from certain growers in Idaho and Washington, some of whom were honest, but some of the dealers appear to have taken advantage of a threatened shortage in seed peas to perpetrate substitution. There is another variety which is locally known there as Alaska but which does not have the qualifications desired by the eastern canners. A number of law suits have grown out of the situation, but there seems little likelihood of injured parties recovering more than the price paid for the seed, although the damage they sustained was far greater. The dealers' integrity seems to be the only practical protection against repetitions of the same situation.

TEST ALL CATTLE FOR TUBERCULOSIS.

The cattle of Hinds County, Miss., are practically free from tuberculosis. Following a vote of citizens in the county to eradicate the disease, the project of testing the cattle for tuberculosis was recently completed. The tests required approximately 65 days. During this time 3,992 herds, containing 35,752 cattle, were tested by veterinarians in the employ of the State and the United States Department of Agriculture, Bureau of Animal Industry.

The tests disclosed the fact that the cattle of Hinds County are comparatively free from the disease. Only 49 reactors were found, which is equivalent to slightly more than one animal in each 700. However, in addition to the 49 tuberculous cattle disclosed by the test, 53 had been removed several months before as a result of accredited herd testing.

SECRETARY WALLACE ADDRESSES FARMERS' GRAIN MARKETING COMMITTEE

IN an address before the Farmers' Grain Marketing Committee of Seventeen in Chicago April 6, Secretary of Agriculture Henry C. Wallace said:

"This is the first meeting of farmers I have been able to attend since assuming my new duties. I came here because I look upon you as being thoroughly representative of the farmers of these great surplus grain-producing States and because, also, you have met after many months of investigation and sane deliberation to consider in its completed form what you believe to be an improved plan of marketing your surplus grain. This is a matter in which all good citizens should be interested, whether they live on the farms or in the cities. Any improvement which will enable us to get our grain from the producer to the consumer more cheaply or in better condition or with less waste should be favored by everyone.

"It is true that your work along this line has met with some criticism. There are some good people who seem to think that the farmer should not concern himself with matters of marketing. They look upon him as a man whose sole business it is to produce. They think he should grow the largest possible crops and the greatest possible numbers of live stock without asking either as to the demand for what he grows or the price he is going to get. And they seem to think, further, that having produced abundantly he should turn his crops and his live stock over to the nearest buyer and be thankful for whatever he may receive.

"This is a shortsighted view. The obligation to get our food products to the consumer with the least possible waste and at the least possible cost consistent with fairness to all who handle them is just as sacred as the obligation to produce those crops in the first place. There is no more reason that the farmer should be expected to confine his efforts solely to the production of his crops than that the manufacturer should be expected to confine his attention solely to the mechanical process of manufacturing his goods. No one questions the right and the propriety of the manufacturer selling the products of his factory to the best possible advantage once he has produced them, and many manufacturers carry their products through the various channels of trade to the ultimate consumer to the satisfaction of both. The right of the farmer to do this same thing can not be questioned. The only matter open for consideration is whether he can follow his crops beyond the limits of his own farm or the nearest market place with benefit to himself and to the consumer.

Farmers' Right to Organize.

"Neither can there be any question as to the right of farmers to organize themselves into associations, cooperative or otherwise, for the purpose of marketing their crops so long as they observe the requirements of our laws. The right of the laborer to form organizations for collective action and collective bargaining is clearly recognized. The right of manufacturers, merchants, and other groups of business men to organize themselves into associations for the promotion of their mutual interests is not disputed. So also the right of farmers to form similar associations, both for the promotion of their general interests and for the sale of their labor in the form of crops, with a view to securing fair prices for their products through greater efficiency in handling and distributing them under free competitive conditions, must be admitted without question. A denial of this right would result in reducing the free farmers of the United States to a condition comparable with the downtrodden peasants or peons of less enlightened countries, and would bring upon us all the griefs which those countries are bearing. The right of the farmer to organize, both for social and business purposes, must not be questioned. To what extent this right should be exercised within the law is a matter to be determined by the farmers themselves after painstaking inquiry such as you have made in the process of working out the marketing plan which you are here to consider.

"In the course of your deliberations you have called in representatives of the Department of Agriculture to counsel with you and to give you such information as the department has bearing on the subject of cooperative marketing. This has led to some criticism of the department. Just as there are people who think the farmer should not concern himself at all with marketing matters, so there are some who seem to think that any action of Government looking toward the encouragement of farmers' cooperative marketing associations is reprehensible in the extreme. Perhaps, therefore, I should take this occasion to try to make plain my conception of the proper attitude of the department toward this and similar organizations.

"It is the function of the Department of Agriculture to promote the agriculture of the Nation, that the people may be fed and clothed. The propriety of the work of the department in promoting farm production has never been questioned. It has searched the world for new and better varieties of plants and animals. It has spread knowledge of better methods of farming and of plant and animal breeding. Its scientists have conquered many diseases which have lessened production of plant and animal life. In cooperation with the various State educational institutions it has contributed largely to our knowledge of the science of animal feeding. It has discovered and made known many improved methods of handling farm products. Through its administration of the various regulatory laws it has safeguarded the health of the people. In innumerable ways it has increased production by making available to the practical farmer and stock breeder the discoveries of the painstaking and tireless students of scientific truth. And the people have looked upon its work and pronounced it good.

Government's Relation to Agriculture.

"But there are some people who think that the activities of the department should stop there, and these have been disposed to criticize rather severely such work as the people of the department have done outside of strictly production or regulatory lines. I do not believe these criticisms are either fair or well founded. There is just as much reason why the department should assist the farmer in developing methods of marketing his crops efficiently as that it should assist him in increasing his production. The study of improved systems of marketing as well as the study of conditions the farmer should understand to produce intelligently and to adjust his production to the needs of consumption, are proper functions of the department. The department should inquire into all problems which bear upon the distribution of farm products, not alone their physical handling both on the farm and on the way to market, but the storage of surplus crops in times of plenty that we may have enough at fair prices in times of scarcity, the financing of such crops in order that the supply may be made continuously available at a fair price, and the efficiency and fairness with which these crops are handled all the way from the farm to the consumer.

"This does not mean that the department should assume the leadership in the organization of marketing or any other associations of farmers. Neither does it mean that the department should have any active part in carrying forward the work of such organizations. It means simply that we should follow exactly the same policy with reference to marketing that we have followed with reference to production. The department does not send men to plow the fields or breed and feed the animals or harvest the crops. It tries to make available the most advanced knowledge concerning such operations, in order that the farmer may improve his farming methods. So in the case of marketing it is not the business of the department to organize marketing associations, but it is properly its business to make available the most reliable information it can obtain concerning the organization and operation of such associations. As it has searched the world for improved varieties of plants and animals which can be introduced here with profit to our people, so it should search the world for new and improved methods of marketing farm crops and make available this information for the guidance of those farmers who desire to organize marketing associations.

"The work of the Department of Agriculture in helping the farmer to solve his marketing problem does not stop when he has been shown the best forms of organizations for marketing farm products. These marketing organizations need information with regard to market conditions. In the case of perishable products such as fruits and vegetables, they need daily information from the principal markets in order to know how freely to ship so that there may be an adequate supply evenly distributed instead of gluts in some markets and scarcity in others. Here again is a case where the department furnishes the information, but leaves it to the farmers and the farmers' organizations to act with freedom as they may see fit in the light of the information furnished by the department.

Must Know World Conditions.

"Information is needed, also, with regard to the less perishable products, even with regard to such products as wheat and wool, which are recognized as commodities having a market that is worldwide, and bring American farmers into competition with the farmers who are producing these products in the southern hemisphere and in Europe and in Asia. If farmers are to act intelligently in producing and selling these products, it is very important that they have information with regard to the conditions of production and the supply available in all of these competing countries. They need also to be kept informed as to the rate of consumption of the various farm products in different parts of the world. The Department of Agriculture should furnish this information, both as to the supply and the demand.

A Right Adjustment of Production.

"This information is important to farmers not simply at the time when the products are ready for the market but when the farmers are deciding what to produce. And it is equally important to the consuming public, which needs a continuing supply at reasonable prices. It is coming to be recognized that greater efficiency in getting the product from the farmer to the consumer is only one phase of the marketing problem and the problem of a fair price to the farmer. I believe it is coming to be recognized that if prices are to be satisfactory there must be a right adjustment of production to marketing conditions. This information, then, relating to the world's production and consumption which the Department of Agriculture should make available is especially useful and necessary in aiding farmers to decide what to produce and what not to produce, or in what quantities given commodities should be produced in order that there may be an adequate supply, but not a destructive glut, which inevitably reacts upon production in a restrictive way that is usually harmful to both producer and consumer.

"And in its studies of the marketing of farm crops the department may very properly go a step further. It should make thorough inquiry into the costs of marketing at every stage from the time the crops leave the farm until they reach the consumer. It should turn on the light. If there are points along the way at which there is unnecessary waste, that should be made known. If there are men along the way who are taking too much toll for the service they render, that also should be made known. A plentiful supply of food at prices which are just to both producer and consumer is vital to our national welfare and it is a proper function of government to do what it can to insure it. An accurate estimate of the fair cost of marketing the products of our farms is a necessary preliminary to any real improvement in our marketing system. Only in the light of such knowledge can farmers determine what changes should be made and what part they should have in them. There has been too much guesswork in this matter of marketing. Many organizations have been formed when there was no need for them, and their failures have discouraged the formation of other organizations which were needed.

Purpose of Marketing Cost Studies.

"Such inquiry as the department may make into this matter of marketing costs should be with the sole purpose of getting at and making known the facts in order that improvements may be made and costs lessened, whether by existing agencies or by others which may follow them. Its marketing experts should approach such studies in exactly the same spirit its scientific experts pursue their search for scientific truth. They must be free from preconceived notions and their inquiries should have nothing of the nature of persecuting investigations.

"I have tried to make clear the service the department is glad to render to organizations of farmers, cooperative or otherwise. Let me make it equally clear that the same sort of service will be rendered with the same good will to everyone who has anything to do with marketing our crops and who is striving to improve his marketing methods. It is the purpose of the department to do everything it can to improve our marketing system, to the end that both producer and consumer may receive better service at less cost, and its services are available to everyone who is interested in this matter.

"Now, as to the plan which you have come here to consider. I shall not undertake to discuss it in detail. You have been months in developing it and I could add nothing to your understanding of it. There are some features which appeal to me strongly.

"First. You seem to have avoided the weaknesses which have broken down many previous organizations which were formed to do what you are trying to do. Apparently you have built on principles which have been tested in times past and found to be sound. You have not evolved from your inner consciousness an idealistic scheme, but have profited by the practical experience of those who have gone before.

"Second. You do not undertake to wipe out our great marketing machinery which has been built up through a long period of time as increasing production made necessary. In this you have been most wise. The long-headed farmer who moves into a new country where soil conditions and crops and farm practices are different than those to which he has been accustomed follows the farm practices and customs of the new country for the first year or two. He may think he knows a lot more about farming than his new neighbors, but if he is a man of good judgment he keeps his thoughts to himself and studies the new game until he

knows both the how and the why of it. Then, in the light of his past experience and new knowledge, he can move forward with a reasonably sure foot. So in your effort to develop a more satisfactory, a cheaper, and a more efficient method of marketing your grain, you do not undertake to upset overnight the system which has been developed through the long years, but are adjusting your new enterprise to it. You are making such changes as you feel reasonably sure can be made with safety and with benefit, reserving for future action such changes and improvements as you find can be and ought to be made. That is sound policy.

"Third. You are neither attempting to create a monopoly nor to fix prices. That, also, is exceedingly wise. For the creation of a monopoly, whether in grains or any other necessaries of life, is morally and legally wrong, and any effort either to create a monopoly or arbitrarily to fix prices will result in absolute and costly failure. At this particular time prices of practically all farm products are not only far below the actual cost of production but are relatively far below the prices of other basic commodities. Prices of many of the larger farm crops are well below the prewar normal, while almost none of them are above it. At the same time the basic commodities which enter into practically everything the farmers buy are from 50 to 100 per cent, and more, above prewar normals. In such a situation it is not strange that farmers should look for relief wherever they think it can be found. Nor is it strange that thousands of them should be willing and ready to adopt drastic measures to correct a condition which is so grossly unjust and which is causing widespread hardship and suffering.

Must Keep Level Heads.

"But the more critical the situation the greater the need for keeping a level head. This is no time to be ruled by prejudices. This is no time for shallow thinking. We are in competition with the farmers of the world. We have a supply of farm products far in excess of present demand. Our troubles are in large part due to world conditions which we can not control, but to which we must adjust ourselves as best we may. It is not a time, therefore, to try quack nostrums, which leave the patient worse at the end than when he began to use them.

"For the good of both producer and consumer I hope you will be able now to perfect this marketing plan and put it into action. That will put you in the way of a constructive study of our grain-marketing system. As time goes on your enlarged knowledge from coming at close grips with the problem should enable you and others who have an active part in this business of marketing to work out plans which will enable you to market your crops more cheaply, more uniformly through the year, and to secure for them fairer prices. You can not hope to do this unless there is whole-hearted cooperation among yourselves. No doubt during the period of construction there have been many conflicting opinions. No doubt there have been heated discussions. Perhaps there may have been violent disagreements. All that is quite to be expected in the development of such an enterprise. Out of the clash of minds comes reason and mature judgment. But when the time for action comes all differences should be forgotten. Personal opinions should be yielded freely to the deliberate mind of the majority. Personal ambitions should be put aside, and the full power of every individual should be put into the effort which is for the good of all.

"And now permit me to address you for a moment as a group of men who represent not alone the marketing organizations from which you are delegates but the farmers generally of your respective States. Two years ago I spoke very briefly to a similar gathering in this room, and at that time I tried to warn them of the conditions which have now come upon us. I urged them to organize at once and employ well-trained specialists who could watch economic and industrial changes which were sure to come, and interpret them for the benefit of our producing interests.

Time for Farmers to Act.

"Last year at the gathering at which this particular movement was launched, and at a time when the storm clouds already had appeared above the horizon, I spoke with greater emphasis. I want to repeat here and now what I said then. This Nation can not hope to maintain its agriculture on a sound economic basis unless our farmers give attention to the business end of farming. As large producers they have been the best in the world. As salesmen they have been very, very poor. When prices have been good they have been happy and have taken little thought of the morrow. When prices have been unreasonably low they have complained bitterly and have struck out blindly, vainly seeking relief in ways that were utterly hopeless. Constructive action in a large way has been entirely lacking.

"We have come to a time in our national life when our agriculture must be put on a sound economic basis. This is imperative if production is to be maintained and our people are to be fed at reasonable costs. It is a matter of pressing concern to both producer and consumer. It is, therefore, a time for the farmer to abandon the negative and take the affirmative. It is a time to discontinue criticism and take up constructive effort. It is a time to call in men who are qualified to study this problem in its larger aspects and map out a program which can be followed with benefit to yourselves and to all the people, and which will enable us to maintain this as a self-sustaining Nation, agriculturally, industrially, and politically, through the ages yet to come."

COWPEAS AN EXCELLENT HAY IF CROP IS PROPERLY CURED

If cut at the right stage of growth and properly handled, cowpeas make excellent hay of high feeding value. The Bureau of Plant Industry of the United States Department of Agriculture shows in Farmers' Bulletin 1153, issued recently, that this hay is as valuable as that from other leguminous crops, and is relished by all farm animals.

Throughout the Southern States cowpea hay has been extensively used, and is the main dependence for hay on the plantations. Well-cured cowpea hay has proved satisfactory for work stock and for beef or milk production, and has given good results when fed to poultry, hogs, and sheep. It is said to be better suited for feeding cows than horses. Partly on this account and partly because of the difficulty often experienced in properly curing the large growth of succulent vines, and its coarseness and unevenness in quality, cowpea hay has little standing in the city markets. When it becomes generally recognized that this hay is a source of protein which can be raised on the farm, the quantity of high-priced concentrated feeds purchased for young animals or dairy cows will be very materially reduced.

As a rule, cowpeas should not be cut for hay before the pods begin to turn yellow. The best quality is produced and the hay cures most readily if the vines are cut when most of the pods are full grown and a large number of them are mature. If cut before this stage the vines are watery and difficult to cure, while if left too late before cutting there will be an unnecessary loss of leaves in handling and the stems will be tough and woody.

Copies of Farmers' Bulletin 1153, containing information as to the preparation of cowpeas for various uses, may be had upon request of the United States Department of Agriculture, Washington, D. C.

WEST INDIAN OFFICIALS HELP KEEP OUT CITRUS BLACK FLY

President Menocal, of Cuba, and Authorities of the Bahamas Promise Hearty Cooperation.

Federal Horticultural Board Seeks to Keep Out Parts of Plants and Other Material Carrying the Pest—Prevent Contamination of Cars Coming Through Infested Regions.

Fears of tropical fruit and vegetable growers and shippers, due to the American quarantine against the citrus black fly, effective April 1, are rendered groundless through the hearty cooperation of the Cuban Government and West Indian growers, according to a report made by Dr. W. A. Orton, United States Department of Agriculture specialist and member of the Federal Horticultural Board, after his return from the West Indies.

Black Fly Does Not Attack Fruit.

The quarantine order, which was promulgated by retiring Secretary Meredith after hearing of all interests concerned, is directed particularly against the importation of foliage and parts of plants and other rubbish carrying the black-fly pest and the contamination of cars by coming through regions which are infested. The black fly does not attack fruit and is not seriously in evidence in the principal fruit-growing regions, so that precautionary measures centered around the prevention of contamination of fruit cars en route to ports and the exclusion of foreign materials in the cars.

President Menocal cordially received the American representative and issued a proclamation ordering the removal of all trees and other vegetable growth which could harbor the black fly for a distance of 200 feet on each side of all railroad lines carrying fruit for shipment. Special precautionary measures for clean packing were also ordered by the President in cooperation with the Cuban secretary of agriculture, commerce, and labor.

The eagerness of the Cuban Government to cooperate with the American authorities is shown in the fact that the order for cleaning up railroad lines means the removal of many fine mango trees on the right of way, in addition to the prevalent guava weed and occasional coffee trees.

The quarantine order particularly affects the pineapple, grapefruit, pepper, eggplant, and okra trade of Cuba and the Isle of Pines, and the tomato-shipping industry of the Bahamas. The Government authorities of the Bahamas also promised cooperation, and growers in both places acceded readily to control measures.

The Federal Horticultural Board will cooperate with Florida plant-control authorities in arranging for the speedy inspection of shipments, which include three trainloads a day carried from Cuba to Key West by car ferry.

The prompt action of interested Governments and private parties relieves anxiety regarding shipments amounting to several million dollars a year.

CONFER ON STANDARD CLASSES AND GRADES OF LIVE STOCK

A conference of representatives of the various branches of the live-stock and meat industries, together with representatives of the Bureau of Markets, United States Department of Agriculture, was held in Chicago March 10, 11, and 12 to consider the tentative classes and grades of live stock which have been promulgated by the Bureau of Markets.

The first day was devoted to a consideration of the classes and grades of cattle and calves. On the second day sheep and hogs were considered, while the third day was devoted to a conference of bureau representatives with a view to outlining a series of proposed bulletins dealing with the above subject.

The meetings were held at the Stock Yards Inn and were attended by representatives of the producers, commission men, live-stock exchanges, packers, retail meat dealers, and the Bureau of Markets. Everyone present was agreed as to the necessity of having standard classes and grades of live stock, and, with only a few exceptions, the tentative grades already promulgated were approved.

HESSIAN FLY TWENTY TIMES WORSE THAN THE GREEN BUG

The Hessian fly is twenty times more destructive to the wheat crop than the green bug. Just how much wheat production these insects prevent can not be known in fact, but estimates by the Bureau of Crop Estimates of the United States Department of Agriculture indicate that, theoretically, a production of 13,000,000 bushels is prevented by the Hessian fly and less than 750,000 bushels is prevented by the green bug, in the average of years, or about 1¼ per cent of a full crop by the former and 0.065 per cent by the latter.

Greater damage by the Hessian fly than the average since 1908 occurred in 1914, 1915, and 1916, the highest percentage being 3.66 per cent in 1916, but percentages as low as 0.29 and 0.31 appeared in 1918 and 1917. The largest damage of record by the green bug since 1908 was 0.308 per cent in 1916 and the lowest 0.016 per cent in 1911 and 1917.

Since the beginning of the bureau's record in 1909, the greatest damage to the wheat crop by the green bug, in 1916, may have amounted to only 3,000,000 bushels, while in the same year also occurred the greatest damage by the Hessian fly, which is computed to have been about 37,000,000 bushels. The wheat crop of that year fell to the low production of 636,000,000 bushels, but, although it was the green bug's most active year since 1908, that bug's damage amounted to only three-tenths of 1 per cent (0.03) of a full crop, while the Hessian fly's damage, also a maximum, was about 3½ per cent.

Oklahoma and northern Texas are the principal field of the green bug's operations, with sometimes an extension into Kansas, but it plies its vocation to a small extent in many other States. The Hessian fly is most manifest in a single line of States from Ohio to Kansas and also in Kentucky and Tennessee.

AREAS REQUARANTINED FOR CATTLE FEVER TICK

Six entire counties and parts of five other counties in Arkansas were recently requarantined for cattle fever tick by the United States Department of Agriculture. Department officials say that it was necessary to requarantine these areas because local county authorities failed to complete the eradication work after the quarantine was lifted. The counties requarantined in Arkansas are Chicot, Desha, Drew, Lincoln, Yell, and Logan.

It has been the policy of the department to release from quarantine counties or areas in which the tick had practically been eradicated. When all of the territory in the county or area was tick free, except perhaps a few herds which had not complied with State dipping requirements, it was not deemed advisable to hold the quarantine on the entire county or area and it would be released with the understanding that local authorities would continue the eradication work on the farms or areas which still remained in local quarantine. This plan has been successful in the majority of cases, the specialists say, and seldom has it been necessary to requarantine counties. Of several hundred counties that have been released, only a few have failed to live up to the agreement and have had to be requarantined.

EASTER LILY BLOOMS FROM SEED IN FIFTEEN MONTHS.

New Hybrid Promises to Make American Florists Independent of Foreign Growers.

Work of Crossing Started Four Years Ago By Government Plant Breeders Develops Rapidly—Hardy, Free from Disease, and Easily Grown in Field or Garden.

Commercial florists may become independent of imported lily bulbs for forcing for the Easter trade, in the opinion of specialists of the Bureau of Plant Industry, United States Department of Agriculture.

When it first became known that experiments in raising Easter lilies from seed were being carried on by the Department of Agriculture, few florists were prepared to believe that the undertaking possessed any commercial value beyond the possibilities of producing new hybrids. The results of these experiments, which have now been carried on for four years, indicate, the department specialists believe, that this country can develop an important industry.

Imported Bulbs Often Carry Disease.

Heretofore practically all the Easter lilies produced in this country have been grown from bulbs imported from Bermuda and Japan. In these countries the bulbs are grown in the open and by the time they are ready to be dug and shipped the season is well advanced. When the bulbs reach this country it is necessary to force them rapidly in order to get blooms by Easter. Another disadvantage in using imported bulbs, the specialists point out, is that frequently they carry diseases which cause severe loss to the florists.

On the Arlington Experimental Farm, which is just across the Potomac River from Washington, department specialists produce the lily seeds in greenhouses by artificial pollination. These seed are planted about January 1, pricked out into small pots, and in May the young plants are set in the open ground. They develop rapidly, and by July or August some of the plants reach sufficient size to bear blooms. In October or November the plants are lifted, potted, and removed to the greenhouse. Without undue forcing the plants will come into full bloom the following February to April—15 months after the seed had been planted. Those plants which bloom in July or August and from which the bloom stalk has been cut may send out two or three stalks and can be forced to bloom again by Easter.

Practically no losses have been experienced in growing bulbs from seed, and a remarkably large number of bulbs can be secured in a short time. On the Arlington Farm this work was begun about four years ago with five plants, and there is now a stock of between 15,000 to 20,000 bulbs in the field which were protected by heavy mulch during the winter, and approximately 1,500 plants blooming in the greenhouses.

It is interesting to note that the bulbs grown from seed produce a larger number of blooms than those imported from Japan and Bermuda. One commercial grower, who imports a million bulbs from Japan annually, reports to the department that he produces an average of 2½ blooms for each bulb. In the Arlington greenhouses bulbs grown from seed have produced as many as 12 or more blooms, while 7 to 10 flowers on a stalk are common.

Many commercial growers are much interested in the work which is being conducted on the Arlington Farm, and officials of the department believe that it will not be long until an industry will be developed in this country which will make lily growers here independent of any foreign supply of bulbs.

PACIFIC COAST CONSUMPTION OF PULP WOOD BREAKS RECORD

The 1920 consumption of pulp wood in California, Oregon, and Washington exceeded by 23,000 cords, or 7.4 per cent, the greatest previous record, which was in 1919. Similarly, the 1919 consumption of pulp wood exceeded by 18.6 per cent that of 1917, the previous record. The 1919 production of wood pulp fell short of the 1917 production by nearly 3 per cent, while the 1920 production exceeded the 1917 record by 14 per cent.

This statement is based upon the following complete figures published jointly by the Bureau of the Census for 1919 and the Forest Service of the United States Department of Agriculture, in cooperation with the American Paper and Pulp Association, for 1920.

Year.	Number of mills.	Pulp wood consumed.	Wood pulp produced.
		Cords.	*Shortions.*
1920	11	334,193	243,849
1919	10	311,130	207,607
1918	9	239,774	168,654
1917	8	282,294	213,813
1916	8	259,844	138,782

The hemlock pulp wood consumed in 1920 exceeded by 72,000 cords, or 55 per cent, all other species combined. The detail of consumption by species and by processes follows:

Species.	Cords consumed.
Hemlock	203,234
Spruce (domestic)	61,430
White fir	41,862
Cottonwood	18,806
All other[1]	8,891

Process.	Cords consumed.	Pulp produced.
		Shortions
Sulphite	174,753	97,660
Mechanical	131,601	135,657
Soda	24,839	10,532

[1] All other includes Douglas fir, imported spruce, slabs, etc.

GOOD PACKING HELPS SELL PACIFIC NORTHWEST APPLES

Apples shipped from the Pacific Northwest have a wider distribution than any other commodity shipped from one section. Reports to the United States Department of Agriculture from public carriers for the last five years show that 2,567 cities were used as primary destinations. Telegraphic reports from railroads during the season of 1919–20 showed that about 1,400 cities received carlot shipments from the Pacific Northwest. Pacific Northwest apples have been exported to many countries of Europe, Asia, Africa, Australasia, South America, and to the Dominion of Canada and Cuba.

Orchards throughout the Pacific Northwest have been kept in a state of high cultivation to produce large crops of highly colored fruit. Rigid grading rules, strictly enforced, result in an excellent pack.

This and other information of value and interest to growers are described in Bulletin 935, The Distribution of Northwestern Boxed Apples, recently issued from the United States Department of Agriculture. The bulletin may be had upon application to the Superintendent of Documents, Government Printing Office, at 15 cents a copy.

STUDYING MARKETING CONDITIONS.

The Philippine Government is showing keen interest in what the Bureau of Markets of the United States Department of Agriculture is doing to better marketing conditions in this country. Recently Señor Filemon Cosio, commercial agent of the Philippines, spent some time with officials of the bureau in Washington, D. C., studying marketing practices generally, giving particular attention, however, to the matter of standard containers and cooperative marketing.

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BIG SURPLUS OF ONIONS MUST BE MOVED QUICKLY

According to reliable estimates, onion holdings on March 25 totaled 2,500 cars. Shipments after April 1 in recent seasons have averaged 200 to 300 cars, say marketing experts of the Bureau of Markets, United States Department of Agriculture. The southern crop of new onions is two to four weeks earlier than usual, and shipments of new onions are beginning to move. A production of early onions of about 7,000 cars is forecast for Louisiana, California, and Texas.

It is evident that unless the usual light movement of onions in April and May is increased there will be great waste of unsold stocks of old onions, say Bureau of Markets officials. Dealers are therefore urged to make onions a leader. If the price to the grower is high enough to warrant shipments under present conditions, probably 5,000 cars of the new stocks will move. Otherwise not only will there be a large surplus of old onions but a surplus of new stock as well.

CHINESE ESTEEM GINSENG FOR ALLEGED CURATIVE VALUE

When a product has no market value for food, medicine, or other use in this country it is surprising to find it representing an export value of more than $2,000,000 a year, with an established market extending back more than half a century.

Ginseng is such a product. American medical authorities have never recognized it as having curative value, but for more than a hundred years its root has been highly esteemed in China, and the 1919 shipments of 282,000 pounds sold at from $2 to $23 a pound.

American ginseng was taken to China by early traders, and formed the principal part of the cargo taken by the first American ship that visited China. This ship, the *Empress of China*, sailed from New York for the Celestial Empire on February 22, 1784. Decrease in the available quantity of wild ginseng has led many American farmers and gardeners to undertake the domestic culture of ginseng, and the United States Department of Agriculture has issued a new bulletin, Farmers' Bulletin No. 1184, outlining the best methods of culture. The department previously issued Farmers' Bulletin No. 736 on diseases of the ginseng plant.

Ginseng culture is a long and precarious process, requiring six years from seed to marketable root, with the most particular care during the entire process. The market also is limited to such an extent that it is estimated 700 acres would furnish a continuous supply of all that is needed. In the middle of the last century exports to China were eight times what they were in 1919. The price at that time averaged 94 cents a pound. In 1919 it averaged $7.29 per pound.

PUBLISH WEEKLY FIGURES OF EXPORT GRAIN TRADE

Under a plan newly put into operation by the Bureau of Markets of the United States Department of Agriculture weekly export figures for grain are made available at the points given below simultaneously with their release at Washington, D. C. Every Tuesday the figures for the preceding week are telegraphed to the Federal grain supervisors at Omaha, New York, Baltimore, Minneapolis, Kansas City, St. Louis, Chicago, and Cincinnati, where they are published on the grain exchange bulletin board and in the daily newspapers. The same information is published later in the week in the Market Reporter, a weekly publication of the Bureau of Markets with a distribution of 33,000 copies. The figures are based upon reports of inspections made by licensed grain inspectors at the ports of Boston; Portland, Me.; New York, Baltimore, Philadelphia, Newport News; Galveston, Port Arthur, and Texas City, Tex.; New Orleans, Seattle, Tacoma, Astoria, San Francisco; and Portland, Oreg.

The bureau calls attention to the fact that, as evidenced by the list of ports covered, the figures do not include all grain exported from the United States, and therefore are not intended for use in lieu of the Department of Commerce monthly export figures. They cover only grain exported each week through the principal and specified grain-export points of the United States.

SOY-BEAN OIL MAY PROVE AN INDUSTRY IN THE FUTURE

Figures on the importation of soy-bean oil, particularly from the Orient, indicate the possibility of a future industry in this country, in the opinion of specialists in the United States Department of Agriculture. So far as the census statistics show, no soy-bean oil was manufactured in this country in 1919 or 1920, although several western oil mills and southern cotton-oil mills crushed both imported and domestic grown beans for oil in earlier years. At the same time the importation of oil for the year ending June 30, 1920, amounted to 195,773,594 pounds, valued at $25,233,590. The importations of soy-bean oil cake for the same period amounted to 16,273,785 pounds, valued at $408,895. Beans were imported to the amount of 4,022,552 pounds, valued at $213,696. The absence of a soy-bean crushing industry in this country is ascribed by experts to the rapid increase in acreage, which uses practically all the beans for seeding, and to a large per cent of acreage utilized for pasture, silage, and forage.

B. H. RAWL RESIGNS.

B. H. Rawl, assistant chief of the Bureau of Animal Industry, United States Department of Agriculture, has resigned, effective April 30, to take charge of the educational work of the California Central Creameries. He will have headquarters in San Francisco.

Mr. Rawl is one of the most widely known dairy specialists in the world. A native of South Carolina, he is a graduate of Clemson College. He took special work in dairying at Pennsylvania State College and the University of Wisconsin. He has been with the Department of Agriculture for 16 years. He inaugurated the educational work of the Dairy Division in the Southern States and later was placed in charge of all production work of the division. He was appointed chief of the Dairy Division in 1909 and assistant chief of the Bureau of Animal Industry in 1918. He has been largely instrumental in bringing about the great advance of the past decade or so in scientific dairying.

HOME GARDEN HINTS—HOW TO GROW VEGETABLES

Give Crops the Start They Require in Order to Produce Good Yields—Follow Uncle Sam's Rules and Have Fresh Vegetables All Summer—Spare Time Spent in Gardening Promotes Health and Reduces Living Costs

EARLY CABBAGE IS HIGHLY THOUGHT OF BY HOUSEWIVES

Most people have a fondness of cabbage, served in one way or another, as it contains large quantities of the mineral salts so essential in the diet. Early cabbage is especially desirable, as it furnishes green food at a time when it is needed.

In giving suggestions on growing cabbage, garden specialists of the United States Department of Agriculture say the proper variety must be planted. Some kinds require a longer period for their growth than others. Jersey Wakefield and Charleston Wakefield are most universally planted for the early crop, Jersey Wakefield being considered earliest of all. The variety known as All Seasons has a round, flattened head and is a good intermediate sort. Copenhagen Market is a large, round-headed early cabbage that is very much in favor among market gardeners. Late Flat Dutch and Danish Ballhead are considered the leading late varieties.

Plants must be started indoors, in a hotbed, or be shipped from some point farther South where the season is advanced, if extra early cabbage is to be grown. One or two cigar boxes filled with fine soil and placed in a south window will form a seed bed for starting 100 to 200 cabbage plants. The little seedlings must be transplanted to larger boxes or to a cold frame when they begin to crowd each other in the seed boxes. Cabbage plants are quite hardy, and along the South Atlantic Coast are grown in the open by the acre.

Plant early cabbage in the richest part of the garden, having previously worked into the soil all the rotted manure that can be spared and then added high-grade commercial fertilizer at the rate of 10 pounds to every 100 feet of row. The fertilizer should be well mixed with the top 4 inches of soil over a space the full width of the row, which is generally 3 feet.

Do not plant cabbage on land where it was grown last year, especially if any of the heads were diseased or showed any kind of trouble. It is always a good plan to rotate crops, even in the small home garden. Cabbage is subject to several diseases, but fortunately these do not do much harm in small gardens. Insects, however, play havoc with the crop from the time it is planted. Cutworms are generally waiting in the soil during early spring to cut off the stems of the cabbage plants just at the surface of the ground.

Protect the Plants From Cutworms.

The best remedy, or rather preventative, is to place bands or tubes of stiff paper around the stems of the plants as they are being set in the garden. Thin cardboard makes ideal plant protectors. By cutting the cardboard into strips about 3 inches wide, sections can be cut off and rolled around a lead pencil to form a tube. The protectors should extend an inch below the surface and at least 2 inches above. After the stems of the cabbage plants have become toughened and begin to grow rapidly the protectors can be taken off.

Cabbage worms, the eggs for which are laid by the light-yellow butterflies that are often seen flying about the cabbage plants, do a great amount of damage. Dusting the foliage and the heads with air-slaked lime, to which a little Paris green has been added, or spraying them with arsenate of lead, 1 ounce to a gallon of water, are both effective. There is no danger as the heads grow from the inside and the outer leaves, to which the poison is applied, are all removed.

SPINACH IS GOOD CROP TO GROW FOR EARLY SPRING

Well-grown spinach is one of the best early spring and late fall greens that can be raised in the garden. Spinach is adapted for growing in practically every locality, requires a rich soil, stands cold as well or better than does lettuce, but does not do well during the hot part of the summer. United States Department of Agriculture garden specialists suggest one or two plantings in the early spring, just as soon as the danger of severe frost is past, and a planting late in the summer for fall use. Throughout the South spinach can be planted in October and remain in the open ground all winter.

For growing spinach in the home garden a bed about 5 feet in width and 25 or 30 feet in length should be spaded and a quantity of well-rotted manure worked into the top 3 inches of soil. Three pounds of commercial fertilizer should also be scattered over the surface and well worked into the soil. Six to eight ounces of seed will be sufficient for this space. Sow in little drills or furrows running lengthwise of the bed, the rows to be about 6 or 7 inches apart. The seed should be covered one-half inch deep and the soil slightly firmed over it. Watering may be necessary if the weather should be extremely dry following the planting of the spinach seed.

Spinach grows quickly and requires very little cultivation, except to loosen the soil a trifle between the rows and keep weeds from getting a start. If the plants are too thick—that is, crowd each other—they can be thinned out and those removed in thinning cooked for greens. The plants left will then have room to grow larger. Spinach is very desirable as an early spring green, as it contains plenty of iron and other mineral matter. It should always be used while young and tender.

SWISS CHARD VALUABLE FOR GREENS THROUGH LONG PERIOD

Chard, usually spoken of as Swiss chard, is a form of beet with fleshy leaf-stems grown mainly for use as greens during early summer and fall. The seeds resemble those of the common garden beet and are planted in exactly the same manner. The soil on which chard is planted should be well enriched and thoroughly prepared, say garden specialists of the United States Department of Agriculture. Plant the seeds in rows 18 inches to 2 feet apart and 10 to 12 seeds to the foot to insure a full stand. The seeds should be covered about 1 inch deep, and the surface slightly packed with the back of the hoe after the seeds are covered.

When the young plants are nicely started they should be thinned to stand about 4 or 5 inches apart in the row. The plants thinned out are commonly used as greens. Cultivate the same as beets, and in cutting for greens remove the leaf stems, leaving the roots and hearts of the plants to produce more leaf-stems. The thick leaf stems are cooked the same as other greens. The variety of chard known as Lucullus is considered best. Chards are of an ornamental nature and can be planted as a border along the garden.

"BETTER SIRES—BETTER STOCK" CAMPAIGN GOES AHEAD

What the United States Department of Agriculture, in Cooperation with the State Agricultural Colleges and Allied Agencies, Is Doing to Encourage Nation-wide Improvement of Live Stock.

Cow-Testing Associations Prove Valuable for Western Farmers

Numerous examples of the valuable work being done by cow-testing associations are contained in reports of testers of these organizations sent to the western office of the Dairy Division of the United States Department of Agriculture.

According to the reports, marked progress has been made in replacing inferior bulls with high-class purebred animals. Six of the testing associations—of which three are in Idaho, two in Colorado, and one in Washington—have reached the 100 per cent purebred-bull mark, having eliminated all scrub sires from their herds. Another 100 per cent association was added to the list in January, and several others are getting near this mark.

The Petaluma (Calif.) association has only two scrub bulls left. The dairy department of the local farm bureau of the county in which this association is located has a plan for an annual purebred-bull sale, the first of which was held several months ago. Young bulls out of 400-pound dams and older proved bulls are consigned to this sale by breeders and by dairymen wishing to dispose of bulls which they have used as long as they can in their own herds. The sale was the means of introducing 25 purebred bulls into the county, and the association hopes by this means to eliminate all scrub bulls from the county and to keep the dairymen supplied with good bulls in the future. Through these sales it also hopes to open a market for proved bulls, and so keep these bulls in service in the county for many years.

The tester of the Skagit Valley, Wash., association reports that the last scrub bull has been "discharged from service." He says also that one farmer increased his production by 12 pounds of fat per cow on 25 cows from November to December by better care and feeding, and adds that this is an easy way of getting 300 pounds of fat more a month without milking any more cows.

The head tester for the Los Angeles, Calif., association reports an increased production by the 3,000 cows in the association for December, 1920, as compared with December, 1919, which, he says, means an increase of more than $30,000 a month.

One herd of 30 cows in the Orange County, Calif., association increased its production from 19 pounds of fat per cow in September to 36 pounds in December, largely as a result of advice on feeding given by the tester of the association. This increase of 510 pounds of fat a month is more than some 30-cow herds are giving at this season, he reports. Another herd in this association increased from an average of 27 pounds per cow to 41 pounds in six months. One dairyman in the association culled 13 animals from a 45-cow herd, and by so doing decreased his production only 12 gallons a day but saved over $60 a month.

The tester of the Ada association in Idaho reports that every cow in the organization has been tested for tuberculosis. Every herd in this association is headed by a purebred bull and 25 per cent of all the cows are purebred.

THE BUTCHER TOOK THIS BULL.

"I sold a purebred yearling bull to the butcher because of poor type and a lack of strong masculine qualities." With this comment a live-stock owner in Greene County, Ohio, enrolled in the "Better Sires—Better Stock" campaign, the purpose of which is to improve the quality of domestic animals. Persons cooperating with the Government and the various States in this effort agree not only to use purebred sires for all classes of animals and poultry kept for breeding but the purebreds must in addition be of good quality. The culling out of inferior purebreds such as the bull referred to is one means of attaining the desired results.

LIKE FEEDING COWS IN THE DARK.

"When I bought my farm two years ago there was a herd of scrub cows on it," writes a Wisconsin farmer to a field agent of the Dairy Division, United States Department of Agriculture. "I joined the cow-testing association, and soon found that my scrub cows were a failure, so I disposed of them and bought some purebred and grade Holstein cows. The cow-testing association is a guide-board on the way to better dairying and a big saving in feeds, as one can feed to so much better advantage where the production is known. Trying to feed without records of your cows is like feeding in the dark."

Milk Yields Increased By Use of Purebred Sires—Dams Not Affected

The production of the dairy herds of the future through the use of proper sires of high quality is a subject that is interesting dairy specialists of the United States Department of Agriculture. There is ample evidence that such bulls improve the production of their daughters, but it is a difficult matter even to estimate what the limit in improvement in future generations will be.

Figures compiled by the field man of the Dairy Division of the department who is encouraging bull associations in Maryland, show the improvement in production made by daughters of purebred sires belonging to the New Windsor Bull Association, as compared with their dams. The six daughters of Repose's Masher gave an average of 8,197 pounds of milk in a year, and 328 pounds of butterfat. The average of the dams of these young cows was 6,782 pounds of milk and 266 pounds of fat. The average increase, therefore, was 1,415 pounds of milk and 60 pounds of fat. An additional production of over 1,400 pounds of milk and 60 pounds of fat is no slight matter, the dairy specialists say.

The ages at which the daughters of Repose's Masher made their records were 3, 4, and 6 years, the average being about 4. "When farmers put in purebred bulls to replace scrubs or grades, they sometimes have the feeling that the presence of the new bull is a charm which will increase the production of the herd right away," say the dairy specialists. "This is not to be expected. The cows which are bred to the bull are not themselves affected in their nature or their milk-producing ability. The influence of the bull is shown only on his offspring.

"It takes about four years before the first heifers from a new bull finish their first year's test; and as they are then only heifers, their mature mothers may still outdo them in production. The thing to be considered is, What character of young cows are to replace the old ones when the latter are gone?

"This is the principle involved in bringing in meritorious bulls—to make the future cows better than the present. A dairyman should not expect to see the good results from a purebred bull in the first year, but wait three to five years

and then see how much better his herd is. The dairyman should look to the future and plan now by using a good purebred bull to have a better herd in from three to five years. The question is, When these years have passed will he be where he was three to five years earlier or will he be better off? The wise dairyman, who takes the right course now, will at that future time find himself reaping the benefit."

BETTER SIRES—BETTER STOCK PROGRESS IN ISLAND OF GUAM

The "Better Sires—Better Stock" campaign is making substantial progress in the island of Guam under the auspices of the Guam Agricultural Experiment Station. The same plan for conducting the campaign that was started in this country more than a year ago by the United States Department of Agriculture is being carried out on the Island. Local representatives to take charge of the work have been appointed in each district.

A copy of the following letter by Capt. I. C. Wettengel, U. S. N., Governor of Guam, expressing his interest in the campaign, has just been received by the department. "I have read with great interest the booklet on the 'Better Sires—Better Stock campaign,' and I am very glad to learn that this movement is to be taken up in Guam. The improvement of the breed of hogs already accomplished by the efforts of the Agricultural Experiment Station is an object lesson to the farmers of Guam, and this campaign for better live stock of all kinds should receive the hearty support and encouragement of everyone who has the interests of the Island at heart."

A very good start has already been made on the Island to build up distinctive breeds. The Agricultural Experiment Station has for some time been recommending the use of Ayrshire cattle, Morgan horses, Berkshire hogs, and Rhode Island Red chickens. These breeds have been found to thrive best in Guam and will cross well with native stock. No other purebreds are being imported.

WOULD SUPPLY ASSOCIATION WITH BULL AT HALF PRICE

Following the meeting of the Nebraska State Dairymen's Association at Lincoln, Nebr., recently, a prominent breeder from that State offered to provide bulls for a bull association at half their value, according to a representative of the Dairy Division, United States Department of Agriculture. Appreciating the value of the bull association in establishing a breed in a locality, and also in establishing a certain line of breeding, this dairyman told a dairy extension specialist that when he formed a bull association he could choose the bulls from his herd, set a fair price on them, and he (the breeder) would cut that price in two.

This breeder has a large and unusually high-producing herd of purebred cows, the herd average being more than 18,000 pounds of milk a year. Offers of a similar character have been made by several other breeders in different sections of the United States, says the department specialist, all of which indicates that the value of the association plan as a means of improving the quality of dairy cattle is becoming more generally recognized.

When a bull association is formed one dairy breed, usually the one predominating in the locality, is selected for that association, and purebred bulls of that breed are used to improve the herds. As time goes on a number of good purebred and grade herds of the same breed are developed. When one breeder supplies a number of bulls to one association these bulls, generally of similar breeding, make it possible to concentrate the blood of certain families among 250 to 300 cows. Each bull is used in each block for two years. Thus the four or five bulls are used consecutively in every herd in the association for 8 or 10 years, developing in one community a large number of dairy cattle of uniform type and breeding.

NO EXCUSE FOR RUNTS FROM WELL-BRED, GROWING STOCK

To obtain the most rapid growth and best development of live stock keep good stock, and see that nothing checks its growth from the time it is born. This is the method by which a North Dakota farmer prevents runts among his animals.

In a letter on this subject to the United States Department of Agriculture, which has been studying the causes and prevention of undersized animals, he says, "In the 40 years of my farming and breeding and raising live stock of all kinds I do not remember a runt in any class or breed. I have always been a liberal feeder and a good caretaker. Besides, all stock had access to good, fresh water at all times. With this, in addition to good shelter and ventilation, it seems that my young stock would not stop growing from the time they were born. Use good judgment in feeding, and don't neglect the details."

A farmer in Vermont writes, "A well-bred animal well cared for will not produce runts. There is absolutely no excuse for one in live stock or poultry. By well-bred live stock I mean strong, healthy stock, well taken care of for several generations, and bred for constitution. This has been my experience from boyhood, first, with rabbits and game fowls, and later with sheep, hogs, horses, and cattle. An accident to a well-bred and healthy animal will, if the accident occurs before it reaches maturity, affect its size but not its productive capacity. That is, it will not influence its ability to produce such young as it would have had if no accident had occurred. Eliminate all females that are not good mothers, and you will soon stamp the whole herd with constitution. Then with care, which means attention and feed, your runts will fail to materialize."

COW RETURNS VALUE RECEIVED PLUS.

What the cow-testing work has meant to one Wisconsin farmer was stated so simply and concisely in a report to an agent of the Dairy Division, United States Department of Agriculture, that it is worth passing along. This farmer says:

"The cow testing in the west section of Outagamie County has been carried on with marked success.

"We have become better acquainted. The man who has been taking good care of his cows has also become better known.

"We have learned to know our cows not by what they seemed but by what they actually are, to understand the necessity of selecting heifer calves from our best cows to be raised for our future herd.

"We have learned to look on the dairy cow not as a necessary part of our personal property but a real live machine, capable of returning values received plus, and that plus depending largely upon the care, feed, and breeding of the dairy cow."

BETTER STOCK GETS BETTER CARE.

In contributing his experiences on the cause of runty live stock in a recent inquiry conducted by the United States Department of Agriculture, a Vermont farmer urges greater care in the early life of domestic animals. "When people can be educated to the proper care and feeding of stock," he declares, "the runt will be practically wiped out. The reason, perhaps, why there are not so many runts in purebred herds as in others is because the man who cares what kind of stock he keeps cares enough to care for them better." He concludes that one of the principal factors in the cause of runty live stock is the man who has the care of them the first year.

Prizes Offered in Better-Bull Campaign to Free Missouri Farms of Scrub Bulls

An illustration of the earnestness with which various States and local organizations have taken up live-stock improvement work, especially in connection with purebred sires, is shown by the work in Missouri. The extension service of the Missouri College of Agriculture started a better-bull campaign in January, 1920, and so successful were the results of the work during the year that the Kansas City Chamber of Commerce appropriated $2,000 to be used in cash prizes this year.

Conditions of Prize Offers.

The prizes are to be awarded to the four counties which replace the greatest number of scrubs with purebred bulls, $1,000 being the first prize, $500 the second, $300 the third, and $200 the fourth. To obtain a prize, however, a county must replace at least 25 scrub bulls.

In an announcement of the contest received by the United States Department of Agriculture, State officials directing the work say they have concentrated on better bulls because they think the greatest good will result from efforts along this line. The announcement states that any county in the State is eligible for entrance in the contest. Awards will be made on the basis of the number of scrub bulls of breeding age replaced by registered bulls. A scrub bull is defined as one that is not registered or eligible for registry.

Any county which at any time during the year completes its work with 100 per cent purebred registered bulls will be entitled to first prize; but should more than one county show 100 per cent registered bulls the various counties will be entitled to first, second, third, and fourth prizes, respectively, in the order in which they complete the work. The counties competing in the contest are to form organizations, under the leadership of the county agent, to promote the work. All questions arising in the contest will be referred to a better-bull committee of the Missouri College of Agriculture for settlement, and the decision of this committee will be final.

Report Monthly to State Project Leader.

A monthly report showing the name and address of the owner of the scrub bull replaced and breed of the registered bull in which an interest has been purchased will be forwarded on the first day of each month to the State project leader. At the end of the year a final report, certified by the county agent, will be sent in, giving the names and addresses of owners of scrub bulls which have been replaced, together with the breed, name, and registry number of each registered bull in which the contestants purchased an interest.

WELL-BRED HOGS GAIN WEIGHT MORE RAPIDLY THAN DO SCRUBS

The importance of good breeding in the growth of live stock, and especially in the prevention of runts, is illustrated by the experience of an Indiana swine grower. "I started with stock," he remarks in a letter to the United States Department of Agriculture, "direct from the foundation stock of the breed, and the results were satisfactory. When I had time to read of the work of other men, the results of feed composition and experimental feed trials, I took from these experiences what I thought practical for me to follow, and the results, though not exceptional, have been the natural results of good blood and good feed. One of my boars, farrowed in April several years ago, weighed 165 pounds the following September. At 16 months he weighed 606 pounds, at 28 months 850 pounds, and the following fall 1,015 pounds. This boar was one in a lot of 15, as uniform a bunch as I ever saw. Others grew into 600 and 800-pound hogs under farmers' care."

"In addition to good blood lines," he adds, "care and the right kind of feed are important means of preventing undersized animals, but the most important of all is the man with the feed basket, for it is 'the eye of the master that fatteneth his cattle.' So far as runts are concerned, I have never found it profitable to raise them under any treatment. I have seen lots of 'before and after taking' illustrations on paper but not in the feed lot."

ACCREDITING MAKES HERDS SAFE.

The way herd owners value protection against bovine tuberculosis is illustrated, says a specialist in the Dairy Division, United States Department of Agriculture, by the experience of the Bonner Springs (Kans.) Bull Association. Every member of the association, 11 in number, signed up for the accredited-herd campaign. They had 104 animals tested, and in 8 of the 11 herds no reactors whatever were found. Of the other 3 herds, each had just one animal affected by the disease.

At first sight some of the members thought the effort had been needless and not enough results shown. But when it was considered that the object sought was not merely to eradicate tuberculosis after it had appeared but to protect the herds against exposure to the disease, it was plain that the object sought had been gained. These three sick animals might have spread the disease to all the others and to neighboring herds when transfers were made.

PROVE VALUE OF TESTING SEED CORN.

Canners who are vitally interested in the germinability and freedom from disease of seed sweet corn have made extensive use of the modified rag-doll germinator test developed by the United States Department of Agriculture in cooperation with the Indiana Agricultural Experiment Station. One canning plant in Michigan installed a germinator which permitted the testing of 7,000 ears per week, and kept it in operation all winter. This enterprise is an example of effective cooperation on the part of the canners with their farmer growers. The testing when done on this large scale by the canners is much more uniform than if done by the individual farmers. The increased vigor and yield of the corn crop give better profits to growers and canners.

MAKE FARM POULTRY FLOCKS PAY.

In one Iowa county during one month recently 62 demonstrations in the culling of home poultry flocks were held, in which 6,833 birds were handled and 2,000 culled out, thus saving their owners $3,322 for feed. A total of $1,200 was realized from the sale of these nonproducing birds.

The women in another county have decided that their flocks are mostly mongrel, that the housing is poor, and that 90 per cent of them are infected with tuberculosis. Now they are culling out the infected birds and the nonlayers as the result of information gained from the county extension workers. Farm people are showing a greatly increased interest in the farm-home poultry flock, says the United States Department of Agriculture.

Final Drive Planned by Oklahoma Officials to Free State of Cattle Ticks

A tick-free Oklahoma before the year ends. This is the goal which progressive citizens in that State expect to attain. State pride in having Oklahoma free from cattle ticks is the impelling force behind action recently taken by the governor and State legislature to complete tick eradication at the earliest possible time. Besides a powerful sentiment has developed in Oklahoma among live-stock owners also who realize that a clean State will result in greater development of agriculture and live-stock raising and will attract capital from other States. Of the 47,890 square miles of territory infested with ticks when eradication began, 92 per cent has been released from quarantine. There remains the small area of 4,047 square miles in the southeastern part of the State still under the dominion of the cattle tick. This area comprises only two entire counties and parts of three others, but the region is largely rough, hilly, wooded country.

This last stronghold of cattle ticks will be cleaned up during 1921, according to reports received by the United States Department of Agriculture from its inspectors who are aiding Oklahoma in the work. In 1919, on the recommendation of the State Livestock Sanitary Board, the legislature made a liberal appropriation for the construction of dipping vats and the dipping of cattle in the infested area. The legislature now in session made a further appropriation of $82,000 with which to carry on the work until July 1, 1921, and it is expected that additional funds will be provided to conduct the work until the entire State is tick-free.

Made Detailed Estimate of the Cost.

The businesslike manner in which the Oklahoma Legislature has handled tick-eradication matters is believed to be largely responsible for the progress made thus far and for the confidence in completing the work this year. The funds provided are based on careful estimates down to almost the last gallon of dip required, and to a calculation of the credits available by a 1-mill levy from the counties where the work is conducted.

This detailed knowledge, combined with the realization of the benefits in cleaned territory, has resulted in a most gratifying and progressive spirit in the legislature, and this is reflected throughout the State. It explains why the portions of the State which are free from ticks are willing, through the legislature, to help the remaining tick-infested portions to reach the same goal and attain the same benefits. The measure which makes possible the present aggressive campaign against ticks carried by a vote of 37 to 8 in the senate and 77 to 1 in the house.

Live-stock specialists in the Department of Agriculture point out also that Oklahoma stockmen are taking unusual interest in improved breeding stock, in combating various animal diseases besides tick fever, and especially in live-stock sanitation. There is an increasing sentiment to require the bodies of all animals which die from disease to be burned as a means of destroying centers of infection.

SECRETARY WANTS PROTECTION FOR PRODUCTS OF AGRICULTURE

(Continued from page 1.)

gions, such a policy will be very bad, indeed. What we might gain through temporary enlargement of our foreign markets for manufactured goods will be lost, and much more with it, through the lessened buying power of our own producing population.

Take the case of the farmer at the present time. Last year he produced large crops of all kinds at the highest cost ever known. The fading away of the foreign outlet for his surplus, together with other causes, has resulted in a decrease in the price of the farmers' products until many of them are now selling for less than half the actual cost of production. In the face of this situation foreign products are coming in. In times past we would be inclined to say that our great surplus and low prices are in themselves sufficient protection against foreign competition. We can not say that now, because we seem to be one of the very few nations of the earth which has money and credit and can buy. Take the case of wool, which furnishes the most easily understood illustration. We now have stored up enough wool to last us a year and a half or possibly two years. The prices for wool are far below cost of production. Notwithstanding this, huge quantities of foreign wool still are being brought in and added to our surplus, simply because we have the money to pay. Some of it is passing through to foreign countries, stopping here just long enough to have our credit applied to it. As a result the sheep industry of the United States is facing ruin, and its intimate connection with the banking and other enterprises of the great range country means trouble all along the line.

Guard Against Agricultural Breakdown.

But this is simply illustrative of what is happening to producers generally. The cotton growers, the rice growers, the tobacco growers, the grain and live-stock farmers, the dairymen, the cattlemen in the range country, the producers of fruit, all are being compelled to take prices below the cost of production. Prices are depressed not alone because of inactive business conditions at home but because of the importations of competing foreign products.

It is this situation which must be considered when we take up the matter of the tariff, whether it be the emergency tariff or the permanent tariff. This Nation can not afford to permit the breaking down of its own agriculture, even if for a time we can buy food and other farm products cheaper from some one else. Just now we have a great surplus because of large crops and reduced consumption both at home and abroad, but this condition will not continue. Before the war consumption was rapidly overtaking production. Our population is growing. We can not under any circumstances afford to permit the present discouraging conditions to continue and result in greatly decreased production, because that decreased production may mean exorbitantly high prices within a few years.

Freight Rates Burden Farm Products.

We have not considered, as we must, the heavy additional burden imposed upon producers by the increased freight rates and the large increase in other marketing charges. These increased rates are a differential imposed upon our own producers and to the benefit of our foreign competitors. Take corn, for example. The freight rate on corn from Omaha to Chicago is now 5.32 cents greater than it was in 1913, an increase of 86 per cent; and from Chicago to New York the freight rate is almost 23 cents per bushel. The Argentine corn grower can lay his corn down on our eastern coast for about a third of the shipping cost imposed upon our own western corn grower. It is true that imports have not been large, but every cargo of Argentine corn which reaches our coast is used to depress prices of our corn out of all proportion to the amount shipped in.

The increased freight and other marketing charges on wheat are practically the same as on corn, and are of even more

importance on wheat because of the larger amount exported.

The freight rate on cotton from Memphis, Tenn., to New York is 192 per cent greater than in 1913.

Freight rates on live stock from the producing sections to the consuming centers of the East are very nearly double what they were before the war.

The same burden has been imposed on potatoes, rice, tobacco, fruits, and all other farm products which move to the industrial centers.

Practically all agricultural products should at once be given adequate protection against foreign competition. There is some talk of reestablishing the old import duties on farm products. In many cases those duties, if added, would not equal the extra cost of marketing. To any rates which may be levied now should be added an amount equal to the extra freight charges in getting products to the consuming centers.

The sooner we get down to studying this whole national situation, the better it is going to be for all of us. It is even more important to the industrial sections that our agriculture be put upon a thoroughly sound foundation than it is to the farmers themselves.

CALIFORNIA MILLS SHOW INCREASED LUMBER CUT

California mills cut approximately 8 per cent more lumber in 1920 than in 1918, according to indications from incomplete returns made to the Forest Service, United States Department of Agriculture, through its San Francisco office. This estimate is based upon a comparison of the combined cut of 27 identical big mills representing about 50 per cent of the sawmills of the classes listed. In several instances mills which were rated as Class 4 in 1918 increased their production to the Class 5 standard in 1920. A summary of the mill reports follows:

Identical Class 5 Mills. (Cutting 10,000 M feet or over per annum).

Mills.	*Year.*	*M feet.*
24	1920	612,478
24	1918	570,467

Identical Class 4 Mills. (Cutting 5,000 M to 9,999 M feet per annum).

3	1920	17,747
3	1918	12,155

If this percentage of increase was operative throughout the State, the 1920 lumber cut will be found approximately 1,379,000,000 feet. The computed total cut of California in 1916, the year of greatest production, was 1,420,000,000 feet.

This is the second preliminary statement issued in connection with the census of lumber, lath, and shingle production now being carried on by the Forest Service.

SULPHUR INCREASES YIELD OF ALFALFA ON CERTAIN SOILS

Sulphur as a fertilizer for alfalfa caused an average increase in 1920, in Klamath County, Oreg., of more than 144 per cent. On 27 fields the increase varied from 13.5 to 528.5 per cent, some of the more noticeable increases being on older fields where the yield, without sulphur, had been decreasing for years. In a report to the United States Department of Agriculture, the county agent of Klamath County says the figures were obtained by careful surveys in unsulphured and in sulphured areas. In general, the larger increases were noted on lighter soils, and there was a noticeable difference in the size and number of leaves on the sulphured hay in comparison with that not treated.

The expense of sulphuring an acre of alfalfa should not exceed $3.50, including the cost of the sulphur.

On one ranch, owned by F. T. Nelson, there was still an increase of 130 per cent in the second cutting of 1920 where the sulphur was applied four years before. Observations indicate that increased yields of alsike and red clover on similar soils may also be expected from this treatment. While sulphur is admitted to be valuable as a fertilizer, it is apparently only so in certain restricted areas and on certain soils.

Temporary Pastures Carry More Sheep Than Fields Grazed Year After Year

On a 30-acre field in Maryland, used by the United States Department of Agriculture to test the carrying capacity of temporary pastures for sheep, sufficient pasturage was produced to furnish an average of 505 days' grazing on each acre for a mature ewe. This is equivalent to about two sheep an acre for a season of 250 days, or two and one-half sheep for a 200-day period.

This pasturage is much more than could be obtained from perennial grass grown on land of the character and value of that used in the experiment, the department sheep specialists say, but not more than can be obtained from the best blue-grass pastures. Good land used for such a succession of temporary pastures should produce from 50 to 100 per cent more pasturage than was obtained in this instance.

Important to Keep Up Succession.

In such a system as the one under trial there is not much choice of crops to be used in different months. It is chiefly necessary to make sure of having one crop ready when the preceding one is finished. All the crops used in 1919, the third year of the experiment, stimulated a good flow of milk in the ewes, produced good growth in the lambs, and, after weaning, put the ewes in good condition for fall breeding.

The ewes and lambs were all purebred Southdowns. Some of the ewes raising lambs received a half-pound of grain each daily until May 10, and 22 head of ewes in a fall-breeding experiment received a light feed of grain during September and October. All the lambs were kept for breeding purposes and were fed some grain throughout the summer. In calculating how far the feed actually produced would go for grown sheep it was considered that a lamb ate one-fourth as much as a sheep until July 1, and after that one-half as much. A total of 520 hours' work for a man and a team was required for plowing and seeding the 60 acres used in 1919.

Under the conditions of this experiment fall-sown wheat and spring seedings of oats and peas sown together at the rate of 1½ bushels of each per acre have been most satisfactory for grazing in spring and early summer. Soy beans are ready for grazing about the middle of July and furnish most of the feed until October. In November fall-sown wheat and rye have been used most, though late seedings of corn and velvet beans were used in 1919. The land is still too poor for rape, a good stand having been secured in 1919 for the first time on 1½ acres that had received an extra top dressing of manure.

Carrying Capacity of Various Crops.

The number of days of grazing from 1 acre of each crop in 1919 was as follows, calculated on its pasture value for one mature ewe:

	Days.		Days.
Rape	392	Cowpeas	210
Soy beans	319	Alfalfa	882
Oats and peas	319	Barley	278
Wheat	309	Rye	180

Search Nooks of 13 States for Barberry In Campaign Against Black-Stem Rust

The job of eradicating the common barberry has proved to be a much more extensive one than was anticipated by the United States Department of Agriculture at the outset of the campaign in April, 1918. This campaign was begun as a control measure against the enormous losses of grain from black-stem rust. In years of moderate rust epidemics, the reduction in the yield of wheat alone has amounted to 50,000,000 bushels, while in 1916, the year of a very severe epidemic, there was a reduction in yield of 180,000,000 bushels in the United States alone.

In the grain-growing districts of the upper Mississippi Valley, where the campaign has been carried on, it was supposed that barberry bushes existed chiefly as ornamental plants in the towns and cities. This was disproved during the first year of the campaign by the finding of 176,430 bushes on 1,166 rural properties. About 75,000 of these were scattered widely over 127 properties, showing that all country bushes are not confined to the farmsteads, but had been spread to woodland, pastures, stream banks, and fence rows by the distribution of seeds by birds.

With these facts in mind, the campaign was more vigorously pushed in 1919. As soon as the survey of most cities and villages was completed, a farm-to-farm survey of certain definite areas was begun. The results in 1919 were as follows: 338,000 bushes were found on 14,100 city properties, while 1,760,000 bushes were found on 4,600 farms. Of these last, 1,680,000 bushes were escaped from cultivation on 1,300 properties.

During the calendar year 1920 efforts were concentrated upon the farm-to-farm survey. A resurvey of cities and villages in the counties surveyed was carried on at the same time. In Ohio 7 counties along the western border were completed; in Indiana 19 counties; in Michigan 5 counties; in Illinois 3 counties; in Wisconsin 4; in Iowa 17, in the northwest portion of the State; in Minnesota the equivalent of 15 counties in the southwest portion of the State; in Nebraska the equivalent of 16 in the eastern part of the State; in South Dakota 9 along the eastern border; in North Dakota 10 in the eastern portion of the State. In Colorado the survey of a number of mountain valleys and a strip along the Rocky Mountains from Denver north to the Wyoming line was completed. In Montana the survey of all cities and villages and all large ranches and irrigated areas was completed. No farm-to-farm survey was attempted in Wyoming.

In the entire campaign of three field seasons a total of 5,444,000 bushes have been found and 4,230,000 removed. Included with these, in so far as estimates were furnished, are hundreds of thousands of bushes removed from commercial nurseries during the early part of the campaign. The larger numbers were about 600,000 for Minnesota, 500,000 for Iowa, 200,000 for Wisconsin, and 75,000 for Ohio. Of the 1,214,000 remaining bushes about 1,000,000 are seedling bushes less than 18 inches in height in a single area in southern Wisconsin. The others are scattered over 6,636 properties. State laws requiring the removal of these bushes are now effective in all 13 States, a law having been enacted recently in Wyoming. The work for the field season of 1921 is to continue the farm-to-farm survey in as many counties as possible adjacent to those already completed.

SPREAD BETWEEN STEERS AND BEEF.

Despite the fact that the average price paid for good beef steers on the Chicago market from March 5 to March 19 declined from $9.95 to $9.70 per hundred pounds, figures compiled by the Bureau of Markets of the United States Department of Agriculture show that during the same period the average price of good steer beef at three large eastern markets advanced from $16.47 to $17.63. Similar compilations show that from March 5 to March 19 the average price paid for medium beef steers dropped from $9.20 to $8.93, whereas during the same period the average wholesale price of medium steer beef increased from $15.43 to $16.65.

During the period covered the price of heavy steer hides declined about 2 cents per pound, which would justify either a decline of 13 cents per hundred pounds on live steers or an advance of approximately 25½ cents per hundred pounds on the dressed meat.

CONSIDER GRADES FOR PEANUTS.

The marketing of peanuts in the United States has assumed such proportions that work has been begun by the Bureau of Markets of the United States Department of Agriculture looking toward the establishment of grades as a basis for sales. In order to cover the entire field, it will be necessary to promulgate several sets of grades.

Peanuts are sold by the growers to shellers and cleaners. A set of grades of "farmers' goods" will be required to cover this transaction. As, after shelling, peanuts are sold to the wholesale candy manufacturers, to salters, and to peanut butter manufacturers, a set of grades on "shelled goods" will also be required. Unshelled peanuts which have been cleaned are sold as "jumbos," "fancies," or "extras" to the wholesalers, who in turn sell them to the "man in the street." Two principal types of peanuts are produced in the United States, i. e., Spanish and Virginia. The Spanish are usually shelled before being marketed, and the Virginia are most in demand for roasting.

USDA CLUBS BEING FORMED BY DEPARTMENT OFFICIALS

Much interest is being taken by officials of the United States Department of Agriculture, especially Secretary Wallace, in the formation of "contact clubs" among the workers in centers where several branches of the department are represented. The first club was organized in San Francisco last summer and came about as a result of a suggestion made by former Secretary Meredith, who met with members of the department's staff in San Francisco at that time. Clubs have since been formed at Denver; New York; Portland, Oreg.; Albuquerque, N. Mex.; Cincinnati; Atlanta; Birmingham; New Orleans; and Buffalo. As the department has groups of branch-office representatives in many more places, it is thought likely that the movement will spread widely.

These clubs not only promote interests that strengthen the department from within, it is said, but also bring about a better understanding and appreciation of the work of the Department of Agriculture on the part of the people living in the cities. Officials of the department see many possibilities in the club idea and believe there are numerous ways in which it can perform work of immense value to the service. Secretary Wallace, recently discussing the subject, said:

"This is a matter in which I am very much interested. I can think of nothing which will serve as a better medium of bringing the men together on a common footing and smoothing out the difficulties which may arise between the men in the department engaged in its different lines of work. A very important feature

of the clubs' activities which pleases me is that the various subjects with which the department is concerned are discussed at the meetings with the view of disseminating the information broadly."

As a rule, each club meets once a month, usually at a luncheon. Problems common to all the various branch offices at that particular center are discussed. Workers from one office are brought into touch with the work of other offices, which are engaged in wholly different lines of activity, but are all related parts of the same big governmental department.

The New York club, known as the Nyusda Club, has named a publicity committee and is studying the possibilities of making the work of the department better known in New York City. Mr. Harlan Smith, director of information of the department, who is particularly interested in the work of the clubs along this line, recently attended a meeting of the Nyusda Club and outlined for the members some of the methods by which this work could be effectively accomplished and offered suggestions as to the scope of the club activities.

The clubs, it is said, possess possibilities of serving as speakers' bureaus in arranging for talks by department men before business and other organizations interested in agriculture.

GENTLENESS AIDS LIVE-STOCK GROWTH AND CHECKS DRIFT

The practical value of treating live stock kindly is discussed by a Virginia live-stock owner in a letter to the United States Department of Agriculture. "All cattle buyers," he remarks, "know how great is the 'drift' in shipping cattle. Very much of this loss is due to digestive troubles caused by excitement and fear incident to travel.

"Keep all live stock as quiet and make them as gentle as possible and your feeding costs will be noticeably reduced. Try this suggestion with one litter of pigs."

"It will abundantly repay any live-stock breeder," he adds, "to spend a great deal of time going out quietly among his animals and letting them make the advancements. He will be surprised how soon he can begin to put his hands on them. After they realize his hands are not to be dreaded they will soon enjoy gentle rubbing or scratching. When animals are sheltered from annoying or exciting occurrences they digest feed better and it takes much less to keep up normal growth and fat production."

COST OF GROWING COTTON FIGURED FOR MANY SECTIONS

Estimated in Hours of Labor and Amounts of Seed and Fertilizer.

Planters Can Apply These Figures to Their Own Crops Grown Under Similar Conditions—Wide Variations Shown to Exist on Different Farms in Same Locality.

Figures from which the cotton grower in certain districts can approximate his own cost of production are presented in a preliminary report on basic requirements in cotton production, just issued by the United States Department of Agriculture. These figures, gathered by the Office of Farm Management and Farm Economics in a study of cotton costs on 821 farms, may be taken as a tentative standard for representative cotton-growing areas in Alabama, Arkansas, Georgia, Mississippi, South Carolina, and Texas.

Labor Represents 70 Per Cent of Cost.

It is shown by the investigation that man labor and mule labor make up about 70 per cent of the operating expenses of growing cotton, purchased fertilizers about 10 per cent, and labor, seed, and fertilizer together about 80 per cent.

Region.	Number of farms.	Man hours. Average for—			Mule hours. Average for—		
		All farms.	Lowest five.	Highest five.	All farms.	Lowest five.	Highest five.
SOUTH CAROLINA.							
Anderson County	74	140	88	207	50	43	76
Barnwell County	76	117	72	182	53	39	68
GEORGIA.							
Laurens County	77	78	50	131	42	33	50
Greene County	74	108	61	179	48	32	83
Mitchell County	50	100	67	147	48	40	60
ALABAMA.							
Marshall County	79	128	85	182	57	42	77
Lauderdale County	84	120	72	218	54	38	77
MISSISSIPPI.							
Washington County	29	141	111	212	52	37	64
Monroe County	49	88	57	138	41	30	60
ARKANSAS.							
Lee County	83	164	99	263	55	49	76
TEXAS.							
Ellis County	71	46	29	74	31	26	36

The farmer can figure his labor cost per acre by applying current rates for labor to the figures for hours of labor per acre in his locality, as indicated in the table below, and by adding to this labor cost the cost of seed and fertilizer, which he already knows, he gets a figure that represents 80 per cent of his total acre cost. To add to this the necessary charges for manure, equipment, taxes, insurance, ginning, and overhead, he has merely to figure what 100 per cent would be on this basis.

The foregoing table shows the man labor and mule labor requirements of cotton per acre, as reported by 821 farms in 1920 for the 1919 crop.

The accuracy of the results obtained by using the factors presented in this table will depend very largely upon the accuracy with which the farmer is able to estimate his own labor requirements by judging as to where he stands with reference to the average for his locality. The figures given for the five farms using the least labor and the five using the most will help in this regard.

The following example, illustrating the application of 1920 requirements as determined for the 1919 crop in Mitchell County, Ga., will serve to give an idea of the way these figures on basic requirements may be used from year to year in estimating the cost of production:

Items.	Amounts.	Approximate rates.	Cost per acre.	Per cent operating costs.
Man labor	100 hrs.	$0.30	$30.00	53.4
Mule labor	48 hrs.	.20	9.60	17.1
Seed	1 bu.	$1.00 T.	1.21	2.2
Fertilizer	292 lbs.	45.00 T.	6.57	11.7
Subtotal			47.38	84.4
If $47.38=84.4 per cent of total cost, then the total cost (100%) equals			56.16	
Seed credit	300 lbs.	26.00 T.	3.90	
Total net cost per acre			52.26	
Total net cost per pound of lint	159 lbs.		.33	

In this calculation the hours of labor and the quantities of seed and fertilizer taken as a basis are those reported for the 1919 crop; the rates for labor and the prices of materials are those current in 1920; the 84.4 per cent is the precise percentage for Mitchell County. The net cost per pound of lint is determined by dividing the cost per acre by the average yield for the district, as reported for 1920.

This example is simply illustrative, but the principle is one that can be applied by any farmer in the districts in question so long as there is no radical change in the method of growing cotton. The department does not claim that the results obtained by this method will be exact, but it is believed that a fair approximation of actual costs can be reached.

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DUST EXPLOSION WRECKS CONCRETE GRAIN ELEVATOR

Blast Tears Asunder World's Largest Structure With Fatal Effect to Workmen.

Investigation Fails to Disclose Cause of Blaze Which Exploded Grain Dust—Cheaply Constructed Wooden Structures Not So Badly Wrecked by Explosions.

How the $4,000,000 reinforced concrete grain elevator of the Armour Grain Co., in South Chicago, Ill., was reduced to a wreck and six American workmen instantly killed by an explosion of nothing more than accumulated grain dust, is described by David J. Price, United States Department of Agriculture engineer in charge, dust explosion investigations, who is now directing an investigation and study of the disaster.

The explosion occurred on the evening of March 19, when most of the employees were off duty. The six men who were killed were engaged in cleaning one of the corn driers in the elevator. How the spark originated, which department engineers declare must have ignited the dust in the elevator and destroyed the entire plant and its occupants, is not definitely known.

Reinforced Concrete Walls Torn Asunder.

There was a deafening roar and a sheet of flame and the heavy reinforced concrete walls of the building were torn open and the entire structure, the largest and most modern of its kind in the world, was twisted and cracked, hurling débris in every direction and pouring thousands of bushels of grain into the Calumet River.

The engineers investigating the wreck found conditions similar to those which caused a large number of explosions in various parts of the country a year or two ago.

The building was constructed of fire resistive materials and was considered to be operated on a higher safety standard than the average terminal grain elevator. The construction engineers regarded the plant as embodying the most modern engineering construction principles. The preliminary conclusions reached by the department investigators are that the particles of dust which sifted from the grain and accumulated on small ledges and in inaccessible places was ignited by a spark or small blaze, causing a slight preliminary explosion which loosened the remaining dust and filled the air with flying particles. These in turn exploded, tearing the entire plant in pieces.

Cause of Ignition Not Determined.

Such a spark might have been caused by the breaking of an electric lamp or by sparks from an electrical short circuit. The blaze of a match would have been sufficient to cause the damage, but as the workmen in the plant at the time were all intelligent Americans familiar with grain-dust dangers, it is not believed this was the case.

Demonstrations have shown that irresistible explosions can be caused by the

(*Continued on page 3.*)

SOME WORK TO RAISE CHICKENS.

Lola Sullivan, of Poplar Grove Farm, Trimble, Tenn., a poultry club girl, now 14 years old, has been making a good record since she was 10 years old. In that time she has contended against many disappointments because of diseases, storms, and "varmints." Notwithstanding all her troubles the little girl owns $50 worth of War Savings Stamps, and has a bank account of nearly $300. She concludes her annual report for 1920 with these lines:

All things considered, from beginning to ending,
Hatching and catching and feeding and tending,
Chasing and killing and scalding and pickin'
There's a great deal of work about raising a chicken.
Watching the hen while she's doing the hatching,
Watching her, too, while she's eating and scratching,
Guarding 'gainst hawks and 'possums and rats,
Driving off crows and dogs and cats,
Ready all day to give something a lickin'
There's a great deal of work about raising a chicken.

"EVERYBODY LISTEN" WHILE WIRELESS TALKS TO FARMERS

Daily Wireless Distribution of Market Reports Established April 15 Over Large Territory.

Cooperation Between Post Office and Agricultural Departments Assures Widespread Service to Farmers in 22 Central and Eastern States.

Agricultural market reports are being sent to farmers and other agricultural interests by wireless from Omaha, St. Louis, Bellefonte, Pa., and Washington, D. C., officials of the Bureau of Markets, United States Department of Agriculture, announced recently. The service started April 15. Wireless stations of the United States Post Office Department are being used for this purpose. Each station has a radius of approximately 300 miles, and farmers located in 12 Central and 10 Eastern States will be able to obtain either directly, or through local wireless receiving agencies, information relative to prices and conditions at the leading agricultural market centers and shipping points the same day that business is transacted, and in some instances immediately after the close of the markets. The radio call signal is "Q S T," which means "call to all stations" or "everybody listen."

Three Months' Trial Proves Successful.

This service is the direct outgrowth of the Bureau of Markets' experimental radio market reporting activities at Washington in the past three months. When these experiments were started the idea of sending market reports to farmers by wireless was regarded by some as ultravisionary. But with the cooperation and advice of some of the radio experts connected with the Bureau of Standards the dispatching of market reports by wireless has been proved to be entirely practicable.

Every business day for three months a "radiomarketgram" 400 to 600 words in length has been sent from the Bureau

of Standards' Washington wireless station to farmers and other agricultural interests located within a 200-mile radius of the Capital City. Newspapers, farmers' organizations, and individuals have manifested great interest in the service, and the success of the experiment was such that when the Post Office Department offered to send the market reports from its radio stations at Washington, Bellefonte, Pa., St. Louis, and Omaha at certain hours each day the proposal was quickly accepted. These and the other radio stations operated by the Post Office Department are used primarily in connection with the Air Mail Service, but the Post Office officials are desirous of doing everything possible to assist in improving marketing methods by keeping producers informed of market conditions. The Bureau of Standards' experts will continue to assist in the work of extending the service.

The tentative schedule is as follows: From Omaha a complete report of the Omaha live-stock market will be sent at 11.15 a. m. each day, and at 11.45 a. m. a complete report on the Kansas City live-stock market. At 2.15 p. m. a grain and potato report, giving prices and conditions at the Chicago, Minneapolis, Kansas City, and Winnipeg grain markets; and similar information at the Chicago and other potato markets will be dispatched. At 5 p. m. a daily "radiomarketgram" will be sent, covering national market conditions on live stock, fruits and vegetables, grain, hay, and feed.

The reports to be sent from St. Louis are a national stock yards live-stock market report at 11 a. m.; a Chicago live-stock market report at 11.30 a. m.; a grain and potato report at 2 p. m.; and the "radiomarketgram" at 7 p. m.

The Washington station of the Post Office Department will dispatch the 5 p. m. "radiomarketgram" heretofore sent out by the Bureau of Standards, a report that gives a general daily summary of eastern market prices on live stock and meats, grain, hay, feed, fruits, and vegetables. The same report will be released from the Bellefonte station at 7 p. m. Any changes that are found necessary in the above schedule will be announced by radio in advance of such change.

Every Farmer Can Receive the Service.

Efforts are being made to perfect organizations so that every farmer and agricultural interest in the territory covered may obtain the market information as soon as possible after its receipt by the receiving operators.

There are more than 2,000 licensed amateur wireless operators located in the 22 States concerned. Upon receipt of the reports by these operators they will be telephoned to producers direct, furnished to newspapers, filed with local telephone exchanges, and posted on railway, post office, and other town bulletin boards.

Radio receiving apparatus sufficient to receive the reports costs from $50 to $150; the operation of such equipment is simple, and it is anticipated that producers and others will desire to install wireless receiving sets to obtain the market news direct.

Beet Leaf-Beetle More Destructive in Western Than in Eastern Fields

The beet leaf-beetle can be trapped by placing heaps of weeds or bunches of straw or hay in alkali areas. The beetles seek them as winter quarters, and thus after hibernation may be destroyed by burning.

In the Rocky Mountain States the sugar beet is subject to injury by the yellowish beetle known both as the beet leaf-beetle and the "alkali bug." The appearance, activities, and methods for control of this pest are described in a new Farmers' Bulletin, No. 1193, United States Department of Agriculture. The beet leaf-beetle appears along the Atlantic seaboard from Massachusetts to Florida, and California near the seacoast, and in the alkaline regions of Colorado, Utah, New Mexico, Arizona, Idaho, and Montana. In its eastern occurrence it is not injurious. It also occurs in portions of Kansas and Texas. The main injury is due to attack by the larvæ, or young, but the mature beetle also inflicts considerable damage, hundreds frequently being found on a single plant.

Mature Beetles May Destroy Young Beets.

The adult beet leaf-beetle measures from one-quarter to one-third of an inch in length, and is of oblong form, narrow in front, and varying in color from pale yellow to buff. The egg is rounded, oval, and pale orange-yellow when laid, changing to dull brownish-gray. Eggs are deposited usually on end in irregular clusters, sometimes in layers varying in number from 2 to 50. The beet leaf-beetle under normal conditions subsists upon various weeds which grow in waste alkali soil, but in the spring, before the weeds are abundant, beetles often infest young beets and destroy them.

Later, after killing the available weeds, the insects again resort to sugar beets for food. Many hundreds of acres of beets thus are infested every year. The beet leaf-beetle also is injurious because it acts as a carrier or distributor of the spores of the leaf-spot disease. The beetle cuts large, irregular holes through the leaves of the sugar beet, and the larvæ do similar injury, eating pits in the leaves without cutting through.

Ladybird beetles of three species devour the egg of this insect. A bug feeds on the larvæ and beetles. Mites, spiders, and a fungous disease also attack it. Chickens feed readily on the beetles.

One of the best methods of control is to take advantage of the winter habits of the beetles. They generally pass the winter in alkali areas under tufts of grass, especially "tickle grass," dead weeds, and other rubbish. They may be trapped by placing heaps of weeds or bunches of straw or hay in alkali areas and destroying the traps after the beetles have hibernated. This work should be thoroughly done to get good results. The best time is between the middle of November and the first week of March.

FARM PRICES OF PRODUCTS SHOW SLIGHT DECLINE

Farm prices that were relatively high on December 1, 1920, as compared to the 5-year pre-war average 1909–10 to 1913–14, showed slight decline by March 1, 1921, and those which were relatively low showed a great decline in that period, according to reports recently compiled by the Bureau of Crop Estimates of the United States Department of Agriculture. Using 100 as a basis for comparison to indicate the 5-year average, the statisticians say that wheat, for example, was 168 on December 1, 1920; 171 on January 1, 1920; 167 on February 1, and 165 on March 1.

Corn, which was 119 on December 1, 1920, as compared to the comparative figure of 100 of the 5-year pre-war price, was 107 on March 1, 1921. Potatoes, which were relatively high, being 188 on January 1, 1920, were 125 on March 1, 1921. Cotton, which was relatively low, was 115 on January 1 and 83 on March 1. Butter, eggs, and chickens showed the highest relative price compared to the 5-year average, the figures being 195 for butter, 218 for eggs, and 208 for chickens. Flax, cotton, barley, and corn were lowest compared to the 5-year average, the figures being 110 for flax, 115 for cotton, 117 for barley, and 119 for corn.

RIGHT KIND OF FERTILIZER HELPS MAKE VELVETY LAWNS

An Acid Soil Condition Seems to Promote Growth of Best Grasses.

Putting Green Sod Secured Through Top Dressing With Sulphate of Ammonia—Fescues and Rhode Island Bent Best for Northeastern States.

A recent article in the daily press regarding the effects of ammonium sulphate on turf grasses as determined by experiments continued through 20 years at the Rhode Island Experiment Station has created much interest. The article referred to was brief and emphasized particularly the effect of ammonium sulphate in banishing weeds. Broadly speaking, the article was not inaccurate, but for better understanding there are certain details that need clarification.

The Rhode Island experiments are noteworthy and rich in significance to lawn making, certainly for the New England States, and probably for New York and Pennsylvania. Detailed accounts of the way in which they were conducted and the results secured have been published from time to time, but particularly in the bulletins and reports of the Rhode Island Experiment Station.

Grasses Commonly Found in Lawns.

The soil at Kingston, R. I., is a well-drained loam of good texture but "acid" or "sour"; that is, it turns blue litmus paper red. The natural grass growing in the old pastures in the vicinity is mainly Rhode Island bent, which, in fact, is the dominant grass on well-drained soils in New England and New York. In places, however, practically pure stands of fescue may be found. Both of those grasses thrive well in acid soils.

The experimental turf plats consisted of 19 plats divided into three nearly equal series. One plat of each series was seeded to the same grass or grass mixture, namely, blue grass, redtop, Rhode Island bent, red fescue, and seven grass seed mixtures; so there was one plat of each grass in every series. One series was treated with an acid fertilizer—namely, ammonium sulphate, acid phosphate, and muriate of potash; the second with a neutral fertilizer, consisting of nitrate of soda, acid phosphate, ground bone, and muriate of potash; the third with an alkaline fertilizer, containing nitrate of soda, Thomas slag phosphate, and muriate of potash. No lime was used. The fertilizers were applied so as to furnish equal amounts of plant food. A formula for the acid fertilizer is 250 pounds sulphate of ammonia, 400 pounds acid phosphate, and 250 pounds of muriate of potash per acre.

After some years the most striking result was that all of the alkaline fertilizer plats were very weedy; the neutral fertilizer plats were much better; but the acid fertilizer plats were best of all, being practically free of weeds, including crab grass. None of the grasses succeeded well on the most acid plats except the bents and the fescues; these remained pure in the acid fertilizer plats, but were very weedy in those treated with alkaline chemicals. Blue grass tended to persist on the alkaline plats. Rhode Island bent invaded and captured all the acid plats that had been seeded to other grasses, and on such plats treated with acid fertilizer the turf became equal to that on plats where the bent was originally sown. The fescues spread but little into adjacent plats, perhaps because there was little fescue near the plats to produce seed.

Two conclusions are especially clear from the Rhode Island experiments: First, the bents (Rhode Island and creeping or carpet) and red fescue are by far the best turf grasses for the conditions there; and second, alkaline fertilizers bring about the invasion of numerous weeds in the turf of these grasses. On the plats treated with acid fertilizers there was a gradual increase in the acidity of the soil, and there can be little doubt that this brings about a weedless lawn of the grasses mentioned.

In 1916 the acid fertilizer plats were very acid, the calcium oxide requirement being 6,200 pounds per acre-foot; the alkaline fertilizer plats were much less acid with a lime requirement of 3,800 pounds per acre-foot.

There is good reason to believe that similar results can be secured on all northern soils that are naturally acid. Where soils are neutral or alkaline in reaction it is apparently not easy to change them to an acid condition by any method yet known; at least, efforts in this direction by specialists of the United States Department of Agriculture at Arlington farm, Virginia, have thus far not proved successful. Frequent applications of ammonium sulphate was one of the methods tried at Arlington, and the experiments are being continued. All the evidence points to the desirability of an acid condition of putting greens as well as of lawns, to grow bent or fescue turf of the best quality.

Use Care in Applying Ammonium Sulphate.

Ammonium sulphate may be used in place of sodium nitrate in top dressing lawns, but the same care is necessary in its use, as ammonium sulphate will burn grass quite as readily as does sodium nitrate. It is recommended that it be used at the maximum rate of 5 pounds to each 1,000 square feet. It may be applied by pulverizing thoroughly and mixing with ten times its bulk of sand. After scattering the material, the green or lawn should be watered thoroughly. Or the ammonium sulphate may be dissolved at the rate of 1 pound to 10 gallons of water and sprinkled on the lawn, but this should be succeeded by a thorough watering afterwards. Such applications can be made at monthly intervals, if desired.

Ammonium sulphate has long been used in England to a much greater extent than in this country. Many English writers have commented on its tendency to make soils acid, and various English authorities claim that its continued use will eradicate white clover. It is noteworthy that there was practically no white clover on the acid plats at Rhode Island, while it promptly invaded those treated with alkaline fertilizers. Experiments at Arlington indicate clearly that eradication of white clover in a neutral soil is not to be secured in a single season by numerous surface applications of ammonium sulphate, but it is very likely that in time such a result will ensue.

The one conclusion that stands out most prominently from the Rhode Island experiments is to avoid the use of lime or any other alkaline fertilizer for bents or fescues, as this tends to encourage the invasion by undesirable plants. There is actually no good evidence pointing to the use of lime having improved the turf of bents or fescues. The weed factor alone is an excellent reason to avoid using lime, at least for these grasses.

It is to be understood clearly that the above statements refer primarily to bents and fescues. As regards Kentucky blue grass, which is the most common lawn grass used in the North, the evidence does not point to an acid soil condition or the use of ammonium sulphate as being favorable, notwithstanding the fact that good blue-grass turf is not infrequently found on acid soils.

PRODUCING BIGGER POTATO YIELDS.

To guide boy and girl club members, as well as their elders, in producing bigger potato yields, the United States Department of Agriculture has recently published Farmers' Bulletin 1190, How to Grow an Acre of Potatoes. It is prepared especially for use in boys' and girls' club work, and every step from the selection of the potato soil to the harvesting, grading, and storing of the crop is discussed.

Weekly News Letter

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APPROPRIATE FUNDS TO ERADICATE CATTLE TICK

A delegate to a conference of banks recently stated to a Louisiana parish police jury that if they jeopardized the work of tick eradication by not making adequate appropriation for it, the banks would be forced to call in their loans on cattle, amounting to $75,000 in that parish. This is information just received in a report by the United States Department of Agriculture, and those in charge of the tick-eradication work give it as an example of the widespread interest with which many parts of the South where tick quarantine is still in force unite in their efforts to exterminate the blood-sucking tick.

The report states that the delegate pointed out that the cattle business was the principal business in the parish. More than two-thirds of the land is being utilized for this industry, and the stoppage of tick eradication would mean bankruptcy to nine-tenths of the population of the parish. Needless to say the police jury of the parish made adequate appropriation, and will begin at once a campaign to completely eradicate the tick, says the report.

COOPERATIVE CROP REPORTING SERVICE FOR NEW ENGLAND

Steps have been taken to establish a cooperative crop-reporting service for the New England States. This will involve bringing each State and the United States Department of Agriculture into a joint agreement whereby the facilities now in operation for gathering statistics in each State will be pooled with the facilities of the Bureau of Crop Estimates of the department and operated under the direction of the agricultural statisticians of that bureau. It is expected, as a result of this cooperation, the department statisticians say, that crop reports devoting special attention to the crops of New England will be published, using the county as the geographical unit rather than the State, as at present. Cooperation of this character is in effect in 23 States at the present time.

SHIPPING MIXED VEGETABLES TO MARKET IN CARLOAD LOTS

Because a person likes oranges is no reason why he should be compelled to buy a carload lot or do without. There are many markets in small cities and towns which can not handle fruits and vegetables in carload lots; yet a carload shipment is always desirable from the standpoint of economy. First aid to these markets is supplied by the use of cars loaded with "mixed vegetables." In a single month 664 cars of this description went out from the Los Angeles (Calif.) district to deliver their varied contents to the consumers in small cities west of Denver. A representative of the Bureau of Markets, United States Department of Agriculture, checked off the contents of a "mixed-vegetable car" recently and found that it contained the following commodities: Oranges, lemons, peppers, casabas, lettuce, chili, turnips, onions, leek, chicory, beets, carrots, tomatoes, cucumbers, persimmons, pomegranates, and grapes—a total of 17 products in a single car.

FREEZING FRUIT NEW WAY TO PREVENT ITS SPOILING

Preserving fresh fruit by freezing has passed the experimental stage in the Middle Western and Pacific States. The Office of Preservation of Fruits and Vegetables, Bureau of Markets, has been investigating the new method for several years and the investigators report that such fruits as strawberries, raspberries, logan berries, blue berries, currants, and cherries are now being frozen and held in commercial lots.

So far as the process is concerned, this method of preservation has all the merits of simplicity. The fruit is frozen in the same crates in which it is marketed. The temperature required is about 10° F., though soft fruit is usually subjected to a lower temperature than that of better quality. So long as the temperature is maintained the fruit can be kept in storage. The frozen product must be used as soon as it is thawed, however, as thawing breaks down the tissues and allows the fruit to decay rapidly.

In ice cream, or when made into pies and preserves, the frozen fruit is in every way comparable to the fresh product. In preparing their report the representatives of the United States Department of Agriculture state that the practice is to be recommended in sections where there is a surplus of production and sufficient cold-storage space available to accommodate the fruit. Only fresh, sound fruit should be frozen. Freezing does not do away with mold, though mold will not develop as long as the fruit remains at the temperatures employed.

ENCOURAGING PROGRESS MADE IN SEED GRAIN LOANS

Within a week of the date when the United States Department of Agriculture opened a branch office in Fargo, N. Dak., to distribute seed grain loans to farmers in the drought-stricken areas in the Northwest, the first applications for loans were approved and checks mailed. The day the office was opened printed regulations and instructions were received from Washington and were mailed immediately to county agents in the area. Mr. Warburton, of the department, who is supervising the distribution of the loans from the Fargo office, has held conferences with State leaders of Washington, Idaho, Montana, and North Dakota, and at these conferences the areas most in need of assistance were agreed upon.

From present indications officials of the department say the $2,000,000 appropriated by Congress to be loaned to farmers in drought-stricken areas for the purchase of seed, will not be sufficient to meet the needs in the four Northwestern States. This makes it necessary to use extremely careful judgment in approving applications for loans, for it is necessary to confine them to counties where financial relief is most needed and deny applications from other counties which suffered to some extent from drought last year.

Market gardeners sometimes use as much as 2,000 pounds of commercial fertilizer on an acre of ground. This would be at the rate of about 4 or 5 pounds to a plot of ground 10 feet in each direction, or 100 feet square. Under most conditions 50 pounds of high-grade fertilizer is the maximum amount that should be used on a garden 30 by 60 feet in size.

HOME GARDEN HINTS—HOW TO GROW VEGETABLES

Give Crops the Start They Require in Order to Produce Good Yields—Follow Uncle Sam's Rules and Have Fresh Vegetables All Summer—Spare Time Spent in Gardening Promotes Health and Reduces Living Costs

GROW GOOD TOMATOES IN THE HOME GARDEN

There is perhaps no product of the garden that is so refreshing or palatable as well-ripened, fresh tomatoes, and they can be used in such a variety of ways. While fresh tomatoes are preferable to canned ones they lose very little flavor or quality in the canning and good canned tomatoes add very materially to the food supply of the winter months.

Early ripening adds greatly to the value of the tomato crop and early tomatoes can be secured in most sections only by starting the plants indoors. Garden specialists of the United States Department of Agriculture say it is easy to grow plants indoors by sowing a small packet of tomato seed in a cigar box filled with mellow soil about six or eight weeks before the usual time of the last killing frost in spring. The seeds should be covered about ¼ inch and the soil kept moderately watered and the plants will generally come up in less than a week after planting the seeds. Keep the box near a window where it will get plenty of sunlight, and turn it around each day to make the plants grow straight.

When the plants begin to crowd each other, which will be in about 15 days after they come up, secure a large, flat box, say 3 inches deep and just long enough to fit into the window, fill it with rich, sifted soil and transplant, giving each plant about 2 inches of space. With proper care to turn the box from time to time and also to keep the soil moderately watered the plants will be about 4 inches high, strong, and stocky when the weather has warmed enough to make it safe to set them in the garden.

Tomatoes naturally grow in a warm climate and require plenty of warmth from the start. The plants should be kept at about a living-room temperature until a few days before they are to be set in the garden; then they should be gradually exposed to outdoor conditions to harden them. After they are set in the garden it may be necessary to cover them for a few nights with several thicknesses of newspaper to protect them from the cold.

Tomatoes require a moderately rich soil, not too rich, but just such soil as will grow a good crop of corn or potatoes. A little well-rotted manure can be worked into the spot where each plant is to be set and a tablespoonful of high-grade fertilizer sprinkled over a space about 1 foot in diameter and mixed with the soil will aid in giving the plant a good start. Planting distances will depend upon whether the plants are to be pruned to a single stem and trained to stakes or are to be allowed to grow according to their natural habit of spreading over the ground. If the plants are to be trained they may be set in rows as close as 3 feet, and spaced 18 inches in the row. If they are not to be trained the plants should be set 3 to 4 feet apart in each direction.

COLD WEATHER INJURES EGGPLANTS.

Eggplant, so called because the great fruits are about the size and shape of an ostrich egg, is closely related to the tomato and pepper and requires very much the same treatment as do peppers, say garden specialists of the United States Department of Agriculture. The eggplant is very easily injured by cold and the plants must be started indoors throughout the greater part of the country. Start the seed in the house by sowing in a small box filled with good soil. The small plants should be transplanted to pots or to a shallow box or tray filled with soil and kept in a warm, sunny place until the weather is quite warm. Eggplant requires a rich soil and good cultivation. Occasional applications of very weak liquid manure also benefit the plants greatly.

Eggplant is attacked by several kinds of insects, the most troublesome of these being the little flea beetle which works upon the leaves, filling them full of small round holes. As a remedy, dust the plants thoroughly with air-slaked lime or very fine tobacco dust. By removing the fruits of the eggplant as soon as they attain good size the plants can be kept fruiting until killed by frost. Black Beauty and Improved Large Purple are among the leading varieties.

The best way to apply commercial fertilizer to the home garden is to scatter it broadcast over the ground after it has been plowed or spaded and then harrow or rake it well in order to mix the plant food with the soil.

PEPPERS NEED GOOD SOIL, RICH FOOD, AND EXTRA CARE

Sweet peppers, sometimes called Chinese peppers and Mammoth peppers, are becoming more and more popular as a crop for planting in the home garden. Only a few plants are necessary to supply the family of average size with all the peppers they will want, but it takes good land and extra care to produce peppers of high quality, say garden specialists of the United States Department of Agriculture. Pepper plants are easily injured by cold and the plants should be started in the house, in a hotbed, or in a greenhouse. Perhaps the best way is to purchase a dozen or so good plants from some seedsman or plant grower.

In preparing the soil for peppers, first spade or fork the land over to a depth of 8 or 9 inches. At the same time work in some well-rotted manure and a large handful of commercial fertilizer to each square yard of space. This should be done at least a week before the pepper plants are set out. Then loosen the surface thoroughly at the time the plants are set. Frequent cultivation is necessary, and an occasional application of weak liquid manure to the soil around the plants will keep them growing vigorously. Large, tender peppers can only be produced on thrifty plants, and in order to keep the plants producing all the peppers should be kept picked off and none allowed to ripen.

Ruby King, Chinese Giant, and Large Bell or Bull Nose are among the leading varieties of the large sweet peppers. Pimiento peppers are mild in flavor and are largely grown in the Southern States for making the pimiento pickled peppers. The pimiento peppers can be used in the same way as the regular sweet peppers or they may be left on the plants until red ripe, then used for canning.

A garden plat with a gentle slope toward the south or southeast is most desirable for the production of early vegetables.

Garden plants which grow high and shade the ground should not be planted where they will interfere with sun-loving small plants.

New Bulletin Tells Boys and Girls How to Grow An Acre of Potatoes

When a boy or a girl in a potato-growing club succeeds in raising tubers at the rate of 300 to 600 bushels per acre, as many of them have done, it is a source of inspiration to other members of the club who are less fortunate, and what is perhaps of greater importance, an object-lesson to their elders as to what can be accomplished when the crop is given proper attention. To guide boy and girl club members, as well as their elders, in producing bigger potato yields, the United States Department of Agriculture has recently published Farmers' Bulletin 1190, "How to Grow an Acre of Potatoes." It is prepared especially for use in boys' and girls' club work, and every step from the selection of the potato soil to the harvesting, grading, and storing of the crop is discussed.

Gravelly or sandy loam soils are generally considered especially well adapted to the production of large crops of potatoes, provided they are well drained and well supplied with plant food, says the bulletin. A very light sandy soil or a stiff clay soil should be avoided. The ideal soil is one that does not run together with rains, that works easily, is well supplied with humus, and while well drained, is naturally supplied with moisture. Clover and alfalfa are regarded as the best preparatory crops for potatoes.

Prepare the Land Thoroughly.

Potato soils should be plowed as deeply as possible, but always remember not to turn up more than an inch of the subsoil. The fall is the best season to plow. When the land is plowed at this time it should be disked and harrowed as early in the spring as possible to conserve the moisture and to prevent weed growth. Spring-plowed land should be disked immediately, in order to prevent the possible packing of the newly turned soil. In preparing the seed bed spare no pains to put it in good condition. If the crop is planted on land that is poorly prepared no amount of subsequent cultivation will entirely remedy the defect.

Select the variety that is known to be adapted to the section. Use the best seed obtainable, and if possible make sure that it has been produced from strong, healthy plants that have developed a goodly number of tubers of even marketable size and uniform shape. Before planting, the seed should be disinfected with formalin solution to prevent potato scab. Better yields are obtained by the use of from 15 to 18 bushels of seed per acre, though the average for the United States is 8.6 bushels. Cut blocky seed pieces, weighing from 1 to 2 ounces each.

After planting keep the surface of the ground loose until the plants appear, then deep cultivation should begin, but as the crop develops shallow tillage is recommended. Insects and diseases should never be allowed to get established, but should be controlled by suitable fungicides and insecticides such as are described in the bulletin. When the crop is being harvested, a systematic effort should be made to select desirable tubers for next year's seed.

KILN DRYING FOUND TO KILL WOOD BORERS IN LUMBER

Kiln drying is fatal to some if not all the wood-boring grubs, the Forest Service Laboratory of the United States Department of Agriculture at Madison, Wis., has discovered. This fact is of considerable importance to users of ash, hickory, and many other woods which are attacked by insects. Manufacturers using ash lumber, for instance, are much annoyed by the injury worked by the red-headed ash borer. Air seasoning has no effect on the activities of these grubs, but, according to tests made by the laboratory on wood infested with them, any kiln-drying process which can be considered practical for seasoning ash of any thickness will put an end to the borers.

PEOPLE PARTICULAR ABOUT POTATOES.

Of late years when the price of potatoes has soared to the heights of $6.18 a bushel, which was the average retail price in June, 1920, people have insisted on getting what they paid for. Specialists of the Bureau of Markets of the United States Department of Agriculture have estimated that 75 per cent of the potato crop is now sold on the basis of the Federal grades, although these are not compulsory. In seven or eight of the most important potato-growing States the Federal grades have been declared the official State standard.

Because of its great importance as a food crop, the potato was one of the first vegetables for which standard grades were recommended. During the war these grades were promulgated jointly by the Department of Agriculture and the United States Food Administration. At that time their use was compulsory as far as the licenses of the Food Administration were concerned, and, in view of the fact that they included practically all shipper and receivers, the grades served as a national standard. At the close of the war this arrangement was discontinued, but by that time the grades had become so well established that the trade continued to use them on a voluntary basis, and they are used in the majority of sales of potatoes in this country.

APPLES TO BE MADE COMFORTABLE.

Keep your apples cool and then stand back and let them breathe is the thought back of a campaign now being undertaken by the Bureau of Markets, United States Department of Agriculture, in the far West. The importance of ventilation for apple storage and packing houses has only recently been understood. Now that it has been definitely determined that good apples may meet an untimely death by smothering, every one interested in the industry is cooperating to make sure that the proper provisions for temperature and ventilation are made in constructing new apple packing and storage houses and the remodeling of those built according to old plans.

Out in Wenatchee and Yakima, Wash., almost the entire population is interested in apples in one way or another, so the moving-picture houses are glad to flash the announcement that representatives of the Government are in town and will confer with those interested in the proper construction of storage and packing houses. County agents are cooperating and arranging meetings for the discussion of the principles underlying such construction and even hard-headed lumber dealers give away plans for correctly lumber.

PRESERVES FOOD IN TRANSIT.

During 1920 the specialists of the Bureau of Markets, United States Department of Agriculture, carried on investigations in handling apples and pears in the course of harvesting, packing, and transporting, and the determination of the stage of maturity at which they should be picked, also investigations to determine the factors responsible for the decay and deterioration in shipments of these fruits from the Pacific Northwest.

A study of the methods of precooling and refrigerating California oranges was undertaken in cooperation with the California Fruit Growers' Exchange.

Growing Annual Flowering Plants For Cut Flowers and Decoration

For natural beauty and pleasing color effects it is hard to beat some of the old-fashioned flower gardens made up of annual plants. Nowadays temporary plantings are not relied upon when conditions will warrant the use of more permanent material, such as shrubs and perennials. Annual flowering plants, however, should certainly be encouraged where planting for winter as well as summer effect is not possible, says Farmers' Bulletin 1171, "Growing Annual Flowering Plants," recently published by the United States Department of Agriculture. The bulletin outlines different ways of utilizing annuals, tells how they should be started and grown, and describes many of the common varieties. It is a practical guide for the cultivation of such plants and will be found useful by all flower lovers.

When quick, though temporary, effects are desired, and when flowers are needed at a season of the year when blossoms are scarce on permanent plant material, annual flowering plants are useful, says the bulletin. Most annual plants are also valuable for supplying cut flowers for indoor decoration. When grown for this purpose they should be given ample space for the development of quantity and quality blossoms. Except in special cases, annuals are most effective when planted in masses or groups of irregular shapes about the borders than when planted in more formal designs. Because annual plants make a quick growth they must be provided with good growing conditions. The soil should be well supplied with available plant food and should be reasonably retentive of moisture, though well drained.

Quickly Grown from Seed.

The plants considered in the bulletin can be started readily from seed in the spring and will give bloom or satisfactory foliage effects the same season. While nearly all of them can be started in the open ground, with many of them it is advisable, in order to get a longer growing season, to plant them in pots in the house or under glass in hot beds or cold frames several weeks before the time arrives when they can be planted out of doors.

In establishing various uses of the plants the bulletin classifies them according to the height they reach at maturity. Among the tallest growing plants which are used for backgrounds and screens are castor beans, cosmos, sunflowers, and sorghum. There are a large number of annual plants of intermediate type. Some of the taller of these that grow 3 or more feet high are the basket flower, feather cockscomb, dahlia, larkspur, prince's feather, and summer cypress.

Among the plants listed which grow about 30 inches high are larkspur, scarlet sage, and zinnia. Other plants ranging in height to the low-growing nasturtium, pansies, and sweet alyssum are described in the bulletin, copies of which can be obtained free on application to the United States Department of Agriculture, Washington, D. C.

ESTABROOK TO BE ASSOCIATE CHIEF OF NEW BUREAU

In combining the Bureau of Markets and the Bureau of Crop Estimates of the United States Department of Agriculture, which has been approved by Congress, and which will become effective July 1, George Livingston will remain chief and Leon M. Estabrook will become associate chief. The new bureau will be known as the Bureau of Markets and Crop Estimates.

Mr. Estabrook, who has been chief of the Bureau of Crop Estimates since 1913, was transferred April 1 to the Bureau of Markets as associate chief, in order that he might study the personnel of both bureaus and work out ways and means of combining the two branches of the department to eliminate any possible duplication of work. He will devote his time to assist in mapping out the future development of the new bureau so that it can be of the greatest benefit to the producers and marketing agencies throughout the country. This arrangement will make it possible for the two bureaus to combine on July 1, as specified by law, and begin functioning immediately as one unit.

Mr. Estabrook is deeply interested in marketing subjects, and is confident that the new bureau can develop along constructive lines to be of great assistance to producers and marketing agencies. The bureau will work with farm organizations, which he says need Federal aid in securing dependable crop and market news and information on supply and demand.

Nat C. Murray was made chief of the present Bureau of Crop Estimates and will hold this position until the combination of the two bureaus becomes effective. Mr. Murray has served many years in the Bureau of Crop Estimates, first as a field agent, then as a statistician, and in recent years as assistant chief of the bureau. He is a trained statistician and economist of national reputation. He, more than any other man, has been responsible for the information published in the bureau's Monthly Crop Reporter. He is a member of the American Statistical Association, the American Economist Association, and the Cosmos Club at Washington, the membership of which is made up of men who have achieved distinction in any branch of science, arts, literature, or public service.

BOY AND GIRL CLUB MEMBERS IN GUAM MAKE GOOD RECORD

The production of nearly $12,000 worth of food products in one year is the very creditable record of the 747 members of the Boys' and Girls' Agricultural Clubs on the little island of Guam during the last 12 months. The record is all the more remarkable when it is known that clubs on the island were organized only about 18 months ago. Each boy or girl who becomes a club member is required to grow a certain crop, or raise certain animals, according to instructions given by the Guam Agricultural Experiment Station in cooperation with the Department of Education. Six lines of work are taken up, the production of corn, beans, taro, copra, pigs, and poultry, and because of the warm climate each year is divided into two seasons to correspond with the periods of crop production.

According to a report received by the United States Department of Agriculture the enrollment of 747 boys and girls in club work on the island during last season represents an increase of 202 members over that of the previous season. Of this number 662, or 89.9 per cent of the enrollment, completed their work and made reports. These 662 boys and girls grew 863.5 bushels of corn, 9,357 pounds of beans, and 18,762 pounds of taro. They cared for 740 coconut trees and made 3,594 pounds of copra. In the pig and poultry clubs they raised 204 pigs and 3,916 chickens. The total value of these products was $8,296.07, which taken with the $3,513.63 produced during the previous season makes a total of $11,809.70 for the year. The club members made 430 exhibits at the district fairs last season.

The club work is not only benefiting the boys and girls, who take it up with enthusiasm, but it is having a marked effect in inducing the adults, who are ordinarily slow to adopt new ideas, to improve their primitive practices.

Conserve Marsh or Water Areas to Be Used by Migratory Game Birds

If migratory birds are to be increased or their present numbers maintained, it is necessary to conserve water and marsh areas, say specialists of the Biological Survey, of the United States Department of Agriculture. Small lakes, swamps along coasts or inland, or marsh areas are used by these waterfowl for feeding, resting, and rearing their young, and it is absolutely essential that during their migration and in winter the birds have these necessary places in which to live.

Reports received by the Biological Survey during the last few months from all parts of the country agree that the former alarming decrease in migratory wild fowl, which preceded the treaty and the act of Congress for the protection of migratory birds, has changed to a marked increase. This successful outcome of a great conservation measure has become apparent even more promptly than was anticipated. Thus the first important step toward insuring the perpetuation of wild fowl—without question, a great national asset—has been achieved. Another step of almost equally vital importance, the specialists say, consists in the conservation of lakes and marsh areas.

Much Value Found in Swamps.

The idea is prevalent that the drainage of almost any area is of benefit to a community, but it is stated that under proper conditions "water farming" of many lakes and ponds and of marsh or swampy areas will yield a larger return than would the same area drained and used for agriculture. Many such lakes and areas, however, can be used to produce food and game fish, fur-bearing animals, and a natural supply of ice. In some sections the profits from such use of marshes exceeds the returns from adjacent farm lands. These lands and water areas are valuable in maintaining the underground water level of the surrounding farming section and help to hold back the run-off of rainfall and to prevent excessive erosion. They may frequently be used as State parks or reservations, thus lending themselves admirably to educational uses and affording opportunities for healthful and interesting recreation.

"I believe," says Dr. E. W. Nelson, Chief of the Bureau of Biological Survey, "that a careful survey of the water and marsh areas in any State by men properly versed in the plant and animal products, as well as of the agricultural capacities of the areas in question, will result in the great majority of cases in definitely determining the superior value to the State of such water areas in their natural conditions as against the value of the lands which would be left after they had been drained. Furthermore, the existence of these areas in the State adds greatly to the varied character of the region where located and thus renders it more generally attractive as a place of residence for the citizens.

Drainage Swamps Reduces Wild-Fowl Resorts.

"The Biological Survey is deeply interested in the proper conservation of water areas, since the rapidly increasing drainage of lakes and marshes throughout the country indicates that our wild-fowl resorts and feeding places will be practically eliminated from most of the States unless an effort is made to conserve a considerable number of the best of them. With the elimination of such areas there will disappear opportunities for wild-fowl hunting, and there will be a loss of other products and benefits provided by such water areas."

In connection with the administration of the migratory-bird treaty act, the Biological Survey is advocating the establishment throughout the country of Federal and State bird preserves. This is to be accomplished through cooperation with the State fish and game commissions. Throughout the country such water areas should be strictly guarded as breeding preserves, thereby resulting in largely augmenting the available supply of birds, the specialists say. A certain proportion of such areas should be maintained throughout the year as sanctuaries where no shooting should be permitted, but the majority of them should be made public shooting grounds during the open season. This would in no way interfere with the use of there areas as nesting places for wild fowl during the breeding season.

INCREASING ORANGE YIELDS BY CARE IN BUD SELECTION

Increase in the yield of orange groves has been one result of the studies and experiments in bud selection carried on with citrus fruits by the United States Department of Agriculture. The bud selection work was begun about 10 years ago, and already the results have made striking and far-reaching changes in a number of important commercial practices, especially in California.

One of the common observations, almost any season and in almost any orange grove, is that certain trees bear a very light crop of fruit, or perhaps none at all, while other trees are producing large crops of excellent fruit. Or, it may be noticed that certain branches on some trees are bearing heavily while the rest of the tree is bearing little or no fruit. Department experts have discovered that the bearing habits of the trees are strikingly constant; that the barren- or low-yielding trees are regularly so, while the high-yielding trees are likewise constant in their production of large crops. Through a large number of tests it has been proven beyond any reasonable doubt that orange, lemon, and grapefruit trees propagated from a parent tree which is inherently unproductive will themselves be unproductive, while trees propagated from a high-yielding tree of a variety will likewise be high-yielding trees with a remarkable degree of regularity.

The citrus industry of California has been quick to take advantage of these results and the nonproductive trees in many orange groves have been top-worked to high-yielding strains. Most of the citrus nurserymen, in propagating their nursery stock, are now using selected buds from trees of known bearing habits, and, further, provision has been made whereby selected buds can be secured through a definitely recognized commercial channel so safeguarded as to insure the quality of the buds that are used.

DUST EXPLOSION WRECKS CONCRETE GRAIN ELEVATOR

(*Continued from page 1.*)

ignition of dust mixed with air in certain proportions. When the deadly explosive qualities of the mixture are released, no wall yet constructed has been strong enough to withstand them. In fact, engineers have held that the old-time flimsily constructed elevators stood a better chance because the explosive force could find a vent through an open window or crack or some weak point and spend itself in that direction instead of wrecking the entire structure.

The present agricultural appropriation act, effective July 1, contains an item of $25,000 for resumption of dust explosion investigation work. The Department of Agriculture has in press a circular covering the results of tests showing how dust explosions can be caused by broken electric lights or even by the overheating of dust accumulated on the outside of incandescent lamp bulbs.

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FARM-LABOR SITUATION IS NOW DECIDEDLY EASIER

Greater Supply and Less Demand in Comparison With Past Three Years.

Agricultural Statisticians in the Various States Make Interesting and Valuable Comment Which Shows Wages Are Generally Lower and Demand for Hired Help Below Normal.

The farm-labor situation in the United States is decidedly easier than it has been in the past three years. This fact is shown by figures that follow, being averages of estimates of normal supply and demand made by reporters to the Bureau of Crop Estimates, United States Department of Agriculture, April 1, each year.

Reports from Nearly Every State.

Comments made by agricultural statisticians for the various States on the labor situation are as follows:

Alabama: Supply more plentiful and less expensive.

Arizona: There is an abundance of farm labor at greatly reduced wages.

Arkansas: Supply seems to exceed the demand over the entire State. In some localities white farm labor is still bringing $1.50 per day. At many points colored labor can be had at from 75 cents to $1 per day.

California: Supply appears to be sufficient; wages reduced.

Delaware: Supply more plentiful and wages a little reduced compared with last year.

Florida: Supply plentiful and wages greatly reduced.

Georgia: Supply abundant, but no money with which to hire it. Colored labor is leaving, as employment can not be found.

Idaho: There is no shortage and wages are going to be reasonable.

Illinois: Supply abundant, but still high priced, and farmers are getting along with as little hired help as possible.

Indiana: Farm labor plentiful, but many farmers have no money with which to hire help.

Iowa: Supply plentiful, and a reduction of 25 to 35 per cent of last year's wages probable.

Kansas: Supply seems to be ample. Wages offered reported to be less than half the prevailing price a year ago.

Louisiana: Supply ample; situation much better than last year at this time.

Maryland: Wages about 30 per cent less than a year ago.

Michigan: Supply plentiful, demand light; farmers unwilling to pay wages asked.

Minnesota: Supply sufficient for needs. Wages lower than last year.

IMPROVE THE FARM BUSINESS.

Business that is spasmodic, careless, or otherwise not dependable is not profitable, says the United States Department of Agriculture. Some farmers send their produce to market on consignment without any previous notice to the commission merchant, and in such cases the latter has no opportunity to prepare for a satisfying sale. Some farmers take no pains in making shipments regularly so as to enable the merchant to build up a profitable demand for the products.

In justice to himself, say marketing specialists of the Government, as well as to the commission man, the farmer should find what the market demands, try as far as possible to meet the demand, always make products appear attractive, and deliver them at regular intervals, so far as he can.

Mississippi: Supply generally plentiful and more efficient than for several years.

Farmers Will Do Their Own Work.

Montana: Demand very light, with surplus supply. Farmers financially unable to hire, and will do their own work as far as possible, planting accordingly. Wages of farm labor are $45 to $55 per month, compared with $75 to $85 last year. Sheep herders' wages are $50, compared to $85 to $95 last season.

Nebraska: Supply plentiful, at prewar wages or slightly above, or 25 to 50 per cent less than last year.

New England: Farm labor more plentiful; wages reduced about 30 per cent from last year.

(*Continued on page 8.*)

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SPRAYING PROGRAM ADVISED FOR APPLES AND PEACHES

Growers in Territory Affected by the Recent Freeze Should Modify Usual Plan.

First Ascertain Extent of Injury, and if 10 Per Cent or More of Buds Are Found Alive or Have Set Continue Spraying as Usual.

Fruit growers in the sections affected by the recent freeze should ascertain immediately the damage to their orchards in order that they may know what spraying will be needed, say pathologists of the United States Department of Agriculture. Without this knowledge they may lose money by failing to spray when there is enough of a crop left to warrant it, or waste money by spraying when the crop has been destroyed.

Examine Buds in All Parts of Tree.

The extent of the damage must first be ascertained, it is said. Of course, as the season advances and the buds develop it is easier for the grower to gauge the prospect for a crop; but for some time immediately after the freeze it is necessary for him to make a careful and painstaking canvass of the whole orchard, inspecting each variety of fruit in every part of the tree to determine the damage done. This is done by splitting the buds, the centers of which will be blackened and the stems discolored, if the frost was fatal.

Peaches are reported to have suffered most over the whole frost-stricken area, except in middle Pennsylvania and New Jersey northward and in some favored localities farther south.

Many reports of the damage done as affecting the possibility of crops are misleading, say specialists of the department. If the freeze leaves 25 to 30 per cent of the peach buds unharmed, they say, there is a fair chance of a crop if all other conditions during the rest of the season continue favorable. Even as low as 10 per cent of the buds, they say, has

been known to make a working half crop of fruit.

In the northern portion of the frosted area growers are advised to continue spraying, where 10 per cent of the buds are alive, as the shortage of the crop will probably result in prices that will make the expense worth while. Farther south, however, in regions where the blossoms were practically all killed, it will not be necessary to spray for fungous diseases and insect pests. The department specialists caution, however, that in the past short peach crops have sometimes proved erratic, due to June drop, curculio, and unfavorable pollination conditions. The crop may dwindle as the season advances until it becomes a failure.

The situation with regard to apples over the frosted area, it is said, is much more complicated. Ben Davis, Stayman Winesap, Mammoth Black Twig, and most all the summer apples have had their blossoms killed so completely as to leave no prospect even of a reasonable fraction of a crop, it is said. Many other varieties, including York Imperial, Grimes Golden, Jonathan, Rome Beauty, and to a less extent the old Winesap, have a varying proportion of the buds alive—from 10 or 20 per cent up to 50 and 60 and in some cases 75 per cent. Practically all the open blooms were killed, but from the buds left these varieties have some prospect of yielding a fair crop in some localities if conditions are good during fruit setting and growth of crop.

Keep Foliage in Good Condition.

With apples and pears, specialists of the department say, it is inadvisable to follow the full spraying schedule where the set of fruit does not justify the expense. Two foliage sprays should usually be given to keep foliage in good condition. The operation goes along with cultivation and fertilizing to build up the trees for next year's crop.

For a fraction of a crop of any considerable importance, say from 10 to 20 per cent or more, the calyx spray should be employed by all means, it is said. The usual spray schedule—three treatments, calyx, 3 and 4 weeks' spray, and 8 and 9 weeks' spray—are for the protection of fruit as well as foliage. In the northern districts where apple scab is bad more spraying may be necessary.

The calyx spray should be given as soon as the blossoms have fallen. For this use lime-sulphur solution at the rate of 1½ gallons to 50 gallons of water, plus 2 pounds or arsenate of lead paste or 1 pound of powdered arsenate of lead, specialists say. Failure to do thorough spraying at this time can not be remedied by subsequent treatments.

The same spray should be used again 3 to 4 weeks after the blossoms fall. About June 25 to 30, 8 to 9 weeks after the petals fall, a treatment of Bordeaux mixture and an arsenical should be given. By this time growers will know what fraction of a crop to expect and how much fruit they will have to spray.

Growers, it is said, should be cautioned against being deceived by what they call "disappearance of the crop" after the blossoms fall this year. For a time at this period, they say, the trees will give an appearance of having little or no prospect of a crop. A close inspection of the trees, however, may reveal the presence of fruit.

It is impossible to impress upon anyone that there is dignity in residing upon a farm with impoverished soil, dilapidated buildings, and in environment of ignorance.

State and Federal Quarantine Placed Against Mexican Bean Beetle in Alabama

The Secretary of Agriculture has approved a quarantine of the State of Alabama on account of the Mexican bean beetle, effective May 1. This quarantine places restrictions on the interstate movement of various farm and garden crops which may be a means of carrying this pest to other States. In view of the quarantine promulgated by the State of Alabama giving similar control within the State over the areas actually invaded by this pest, it will be possible to limit the restrictions of the Federal quarantine to such areas.

The restrictions of the Federal and State quarantines apply to (1) fresh or green cultivated beans, including all common garden or field beans, whether string, snap, or shell beans, and including all lima beans, California black-eyed peas or beans, and all green cowpeas and soy beans, but not including velvet beans or English peas or thoroughly dried and cleaned shelled beans or peas of any kind; (2) all forms of "greens" or edible plant leaves, such as those of mustard, chard, spinach, turnips, beets, collards, cabbage, and lettuce, and green corn ("roasting ears"), and matured corn in the shock; and (3) hay and similar forage crops, including alfalfa and pea-vine hay and corn stover, whether baled or loose, and also such forage crops when included with shipments of live stock.

May Move Products if Inspected.

This quarantine does not place an embargo on the movement of the products enumerated. In other words, provision is made in the quarantine for the movement under inspection and certification of practically all of these products. In general this quarantine supplements the existing State quarantine by giving authority to prevent interstate movement of the products, and in this way, it is believed, will render unnecessary quarantine action on account of this insect against Alabama on the part of the surrounding States.

The authorities of Alabama and of other States have asked for the aid of a Federal quarantine in the attempt to control and, if possible, exterminate this pest, and to prevent its interstate spread. Such cooperation on the part of this department has been provided for under a special appropriation of $100,000 made by the last Congress for the fiscal year ending June 30, 1922, of which sum $25,000 was made immediately available.

The Mexican bean beetle many years ago extended its range from Mexico into New Mexico, Arizona, and Colorado, and is an important enemy of the bean crop throughout this area. The natural barrier of the more or less arid and uncultivated region between these western States and the Mississippi Valley has apparently hitherto prevented this pest from extending its range eastward. It is believed to have been conveyed recently to Alabama with shipments of western alfalfa hay, and it has rapidly attained a foothold in certain counties in that State, and over considerble areas it has completely destroyed the bean crops. It also attacks legumes generally, including the cowpea, and thus menaces fertilizer crops so important to the agriculture of the South.

OREGON PASSES GRAIN-GRADING LAWS.

Two bills of particular interest to officials of the Bureau of Markets of the United States Department of Agriculture engaged in the work of standardizing and grading grain were recently passed by the Oregon Legislature and signed by the governor. Under one of the bills the Federal Department of Agriculture is authorized to entertain appeals on intrastate shipments of grain on which standards have been fixed and which have been graded by licensed inspectors. The certificate then issued will supersede the licensed inspector's certificate and be prima facie evidence as to the grade of the grain in any court in the State of Oregon. The other bill establishes a system of discounts for grains of various grades.

Favorable Winter for the Yellowstone Elk Herds May Result in Good Increase

A good increase from the survivors of the southern Yellowstone or Jackson Hole elk herd is looked for this year by officials of the Bureau of Biological Survey of the United States Department of Agriculture, in view of the unusually favorable winter just past. Last year's rains, it is said, produced a plentiful growth of feed on the ranges, and as a result the elk are reported to be in excellent condition, with the prospect of only a normal death rate instead of a repetition of the heavy mortality of the winter of 1919–20, due to lack of forage and a severe winter.

Southern Herd Greatly Reduced in Size.

Reports from representatives of the department engaged in the work of seeing to the welfare of the elk say that in the district tributary to Jackson Hole, including the Gros Ventre and Buffalo Fork Valleys, the elk now remaining of the southern herd number about 9,000, having been reduced to this number from almost 20,000 in 1919. There was such a shortage of feed in the winter of 1919–20, resulting from the severe drought of the previous summer, that in addition to hay purchased and fed by the State it was also necessary for the Federal Government to spend about $36,000 for hay to save part of this herd from starvation.

The tremendous loss that has recently occurred in this herd can not be attributed to a single cause. The one most responsible, however, is the almost total lack of suitable winter range in Government ownership. Were these winter ranges within the national forest the solution would be comparatively simple, even though disastrous to the settlers dependent upon these ranges for their sustenance. Areas upon which the elk are absolutely dependent for winter forage are now largely in private ownership, and can only be secured for use by the elk by purchase or some other arrangement with the owners.

The areas within the forests most suitable for winter range for the elk have been set aside for that purpose as a temporary expedient, but these areas are neither well suited nor located to meet the objects desired. Even with this assistance the elk are only able to survive mild winters, and when a severe season occurs losses from starvation are appalling. It must inevitably follow that this herd will soon be reduced to the number for which hay can be provided unless winter ranges are immediately provided for them.

It is not too late to preserve the elk in goodly numbers, but there must be a thorough recognition of responsibility and adequate State and Federal legislation.

NEW GRAIN-CLEANING DEVICE TO BE GIVEN THOROUGH TEST

An aspirator to be used in cleaning wheat by removing smut dust and foreign material at the time of thrashing is being developed by E. N. Bates, of the United States Department of Agriculture.

Tests with a preliminary model resulted in the removal of approximately one-third of what is ordinarily classed as dockage, and the investigators are optimistic as to the possibility of increasing this amount. Farmers and thrashermen who have seen the model work are quite pronounced in their favorable comment. It remains to be seen whether it can be brought to a degree of efficiency comparable with the commercial cleaners furnished with thrashers sent to foreign countries. There is objection to these latter on account of the cost, weight (approximately 1,000 pounds), the necessity of additional power, and the fact that they are an obstruction on the deck of the thrashing machine. The aspirator being developed by Mr. Bates is attached to the head of the elevator, hence, causes no obstruction to the deck of the separator. It weighs approximately 100 pounds and requires for operation an additional one-half horsepower only.

Cleaning grain at the time of thrashing and thereby saving the farmer the additional expense for cleaning his grain after it has been put in the bins, or saving the charges for cleaning at the elevator, is a factor in efficient marketing, now being developed by the Bureau of Markets. Arrangements are being made to give the new device a try out in the spring wheat section of the Central Northwest during the coming thrashing season.

DEALERS WITHOUT PERMITS DELAY 1918 WOOL REFUND

In finishing the collection of excess profits from the dealers who handled the 1918 wool clip and distributing them to growers the Bureau of Markets of the United States Department of Agriculture has discovered 1,369 small country dealers who operated without permits. In the year 1918 the Government bought the entire wool clip of the country as a war measure. Dealers were allowed specific profits and certain items of expenditure. All surplus at the end of the season constituted the excess that is now being collected and distributed in the interest of a square deal all around. This work was begun by the War Industries Board, and when the board was dissolved the Bureau of Markets "inherited" what was still unfinished. This consisted for the most part of the transactions of smaller dealers living east of the Mississippi. Wool from the plains and Rocky Mountain districts was handled for the most part on a consignment basis, and this type of transaction yielded no excess profit.

More than 3,600 small country dealers obtained permits from the War Industries Board and have rendered accounts, but the discovery of this additional number has slowed up the completion of the work. Scrupulously exact, and with the desire to be just to all concerned, the Government is securing reports from these additional dealers as they are discovered. Distributions to growers amount to more than $101,000 and have gone to 34,530 individual wool growers. Another half million dollars of excess profits are shown by the audits thus far made but have not been paid, and the Government is instituting a number of suits to compel strict compliance with the regulations.

CALORO A PROMISING RICE FOR CALIFORNIA GROWERS

A new variety of rice, known as Caloro, and well adapted to both new and old land is being distributed to California rice growers by the Sacramento Grain Association (Inc.), which has cooperated with the United States Department of Agriculture in rice breeding experiments at Biggs, Calif. This new variety is pronounced the best of several in selections made and grown under comparable conditions during the past few years. It has outyielded all of the standard varieties of rice grown in California from 8 to 30 per cent during the past 4 years. In 1919 it gave an average yield of 7,874 pounds per acre as compared with 6,000 pounds from No. 1600 and 5,800 pounds from Early Wataribune, and in 1920 a yield of 6,300 pounds as compared with 4,800 pounds from No. 1600.

Caloro matures about 2 weeks earlier than Late Wataribune, or 5 days earlier than Early Wataribune, 7 days later than No. 1600, and 10 days later than Onsen. It is the opinion of those who have the opportunity of watching the results from this new variety that it is superior to Early Wataribune, now generally grown in California, in every respect and eventually will replace it. Seed for 6,000 acres was made available this year.

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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FOREST PRODUCTS LABORATORY HAS MECHANICAL BEHEMOTH

A gigantic machine, with jaws which open to take in timber or assembled wood structures 30 feet in height and which can crush them like egg shells when the jaws close together again, has recently been erected at the Forest Products Laboratory of the United States Department of Agriculture at Madison, Wis.

This machine is to be used for testing very large wooden columns. It is possible to exert a force of a million pounds with it, and it is built to crush a wooden post a foot square. Its great range of testing speeds enables it to apply its tremendous load with the fatiguing slowness of a building settling on its foundation timbers or with the speed of a train dashing onto a wooden trestle. Architects and engineers have very little data of the kind which this machine will supply to the scientists at the laboratory.

BANKERS CONSIDER CREDITS FOR COTTON EXPORTATION

Methods for facilitating the exporting of cotton to foreign countries and other questions concerning foreign credit were discussed April 4, in a meeting of directors of the War Finance Corporation and bankers from various Southern States in Washington. No definite proposals were considered, nor was anything of this kind expected. The object sought was a clearer understanding of the problems to be encountered in extending credit upon a safe basis of satisfactory foreign security. The States represented by bankers were Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Missouri, Oklahoma, South Carolina, Tennessee, and Texas. The United States Treasury was represented by Secretary Mellon; the Department of Commerce by Secretary Hoover; the Federal Reserve Board by Gov. W. P. G. Harding; and the War Finance Corporation by the managing director, Eugene Meyer, jr., and several members. The Bureau of Markets, United States Department of Agriculture, was represented by E. G. Montgomery, in charge of the Foreign Markets Service; W. R. Meadows, in charge of the Cotton Division; and C. Morrill, assistant chief of the bureau.

COTTON CONFERENCE CALLED TO CONSIDER PINK BOLLWORM

The United States Department of Agriculture has issued a call for a conference of persons and interests related to the cotton industry, to be held in Washington May 16. The purpose of the conference is to consider how best to protect the cotton industry against the pink bollworm, the most dangerous of cotton pests.

This pest entered the United States from Mexico in the fall of 1917, appearing first in Texas. Prompt measures were taken to beat it back, and about $2,000,000 have already been expended by the Federal Government.

With the complete cooperation of the States invaded there seemed to be a fair chance of eradicating the insect. Unfortunately, the State of Texas has failed to provide for such adequate quarantine and control work as is regarded absolutely necessary by the scientists of the Department of Agriculture, and because of this lack of full cooperation there is now great danger that the pest will be disseminated throughout Texas, which means in course of time throughout the cotton belt.

The department is now considering quarantine measures which will check the invasion from Texas to the greatest possible extent, and the purpose of the conference is to consult with delegates from other States interested before taking definite action.

TREMENDOUS FOREST FIRE LOSSES IN UNITED STATES

Forest fires, sweeping over 56,488,307 acres of land in 45 States, caused damage amounting to $85,715,747 during the five years 1916 to 1920, inclusive, according to information made public by the Forest Service of the United States Department of Agriculture. A total of 160,318 forest fires occurred during this period. Minnesota was the chief sufferer, its loss being $30,805,868.

The bulletin containing this information is a special edition of Safeguarding America Against Fire issued for the Federal and State Forest Services by the National Board of Fire Underwriters. It presents the latest survey of the country's forest fire situation and points out that the major portion of the damage to America's forest resources due to human agencies is preventable. Railroads caused the largest number of all fires chargeable to such agencies.

The bulletin also presents reports from the Forest Service on fires in the national forests and from State forestry officials covering conditions in 20 States. These reports deplore the present-day waste of natural resources and emphasize the need for public education to avoid the disastrous consequences of continued neglect in failing to provide adequate fire protection for the forests of the country.

HOW TO RECOGNIZE AND TREAT THE DISEASES OF SHEEP

How to recognize and treat the more important diseases and common ailments of sheep is told in Farmers' Bulletin 1155, just issued by the United States Department of Agriculture. While the actual treatment of disease is primarily a matter for veterinarians, the information given in the new bulletin will enable sheep owners to recognize symptoms early in their development and thus avoid loses to their flocks. Altogether 57 kinds of diseases and ailments are discussed.

The sheep industry of the country has suffered severely from the ravages of infectious and noninfectious diseases. In addition to the scientific names, the bulletin gives the common names by which the various diseases are known. A convenient arrangement of cause, symptoms, post-mortem appearance, diagnosis, treatment, and prevention makes it possible for sheep owners to obtain a practical knowledge of the best means for preventing and controlling sickness in the flocks. Numerous illustrations add to the clearness of the discussion.

As a companion bulletin to "Diseases of Sheep," the department is distributing also Farmers' Bulletin 1150, entitled "Parasites and Parasitic Diseases of Sheep." This bulletin explains methods for controlling various pests and parasites that attack sheep and points out the advantages of pasture rotation, feeding from racks, and other measures of value in parasite control.

HOME GARDEN HINTS—HOW TO GROW VEGETABLES

Give Crops the Start They Require in Order to Produce Good Yields—Follow Uncle Sam's Rules and Have Fresh Vegetables All Summer—Spare Time Spent in Gardening Promotes Health and Reduces Living Costs

ROOT CROPS IMPORTANT FOR THE HOME GARDEN

Root crops most commonly grown in home gardens are radishes, beets, carrots, parsnips, salsify, and turnips. Of these beets and carrots stand at the head of the list from the standpoint of food value from a given area of land, but it would be difficult to state which of the root crops really is the most important, say garden specialists of the United States Department of Agriculture.

Radishes Require Small Space.

Radishes are among the first garden crops to be planted in spring, and a very small space is required to produce all that is needed by the average family. The soil should be loose, mellow, and very rich, so the radishes will grow quickly and be crisp and tender. Radish seeds should be planted in a shallow furrow and covered about one-half inch deep. Two or three varieties should be planted in order to have a continuous supply. French Breakfast and Scarlet Globe Turnip are among those which mature in the shortest period, while Long Scarlet Short-Top and Long White Vienna or Lady Finger are good to follow the extra early varieties.

Plant Beets Early.

Garden beets can be planted almost as soon as the soil can be worked in the spring. Rich soil that is well prepared is essential. Commercial fertilizers and well-rotted manures are best to supply plant food, but should be very thoroughly mixed with the soil. Egyptian and Detroit Dark Red are among the leading varieties. Sow the seed in a shallow drill, 1 ounce of seed to 50 feet of drill, and cover about 1 inch deep. When the plants have become well established thin so they do not crowd. A little later thin a second time, leaving the plants standing 4 to 5 inches in the row. Use the thinnings as greens. The round or turnip type of beets mature in 60 to 70 days, while the longer ones require 100 to 120 days to complete their growth.

Grow Carrots for Health.

It is an old saying, "Carrots for beauty and beets for strength," and while this can not be taken literally it has a great amount of truth in it. From the standpoint of health, carrots are very important in the diet, and their culture is so simple that any gardener can grow them. Rich, well-prepared soil is the first essential. Good seed is important, and the seed should always be that which was saved the previous year. Oxheart and Chantenay are the varieties most commonly planted. Space the rows 15 to 18 inches apart. One ounce of the seed is sufficient for 100 feet of row. Cover the seeds one-half inch deep and keep the crust slightly broken over the seeds until they come up. Thin twice, finally leaving the plants 3 to 5 inches apart in the row, those pulled during the second thinning being used as "baby" carrots on the table.

Parsnips and Salsify.

Throughout the northern sections parsnips and salsify are important as root crops for the garden. Their culture is very much the same, and they require a deep, rich soil, so the long roots will have a chance to develop. Plant the seed early, so the plants will get well started before the heat of summer comes, and keep them growing the entire season. The rows should be 15 to 18 inches apart and the plants thinned to stand 4 inches apart in the row. Parsnips and salsify may remain in the ground all winter or until wanted for use. Hollow Crown is the leading variety of parsnip, while Mammoth Sandwich Island is the best known variety of salsify.

Grow Two Crops of Turnips.

Turnips are one of the most universally grown of all garden crops. In the Northern States turnips are planted in midsummer and stored for winter use. In the Southern States they are planted early in spring for early summer use, also in the fall for use during the winter. Turnip tops make excellent winter greens throughout the greater part of the Southern States. For early spring culture it is customary to sow the seed in drills about a foot apart and thin the plants to about 3 inches in the drill. By this method the soil may be stirred between the rows and the plants kept growing rapidly so as to attain reasonable size before the heated term of early summer sets in.

In the North it is customary to sow the seed broadcast about the 25th of July on land from which early peas, early potatoes, or some other early crop has been removed. The land is raked smooth and the small seeds simply scattered over the surface, then covered by again raking the soil. No cultivation is required where the seeds are sown broadcast.

In the Southern States turnips are frequently destroyed by plant lice that suck the juices of the leaves. These insects are rather difficult to control, spraying with nicotine preparations being about the only remedy.

Turnips stand considerable cold, but those that are to be placed in pits or in the cellar for winter use should not be allowed to freeze before being stored. If they become frozen in storage, they should not be disturbed until they thaw naturally.

GARDEN ON EVERY FARM AIM OF NEW MEXICO WOMEN

Women in Union County, N. Mex., are working to have on every farm a garden large enough to supply the family with vegetables the entire year, with a sufficient surplus for each housewife to can or dry enough vegetables for winter use.

The United States Department of Agriculture reports that the following is a part of what was accomplished last year in this county under the supervision of the home-demonstration agent: A great many vegetables new to the community were tried out, such as Swiss Chard, Chinese cabbage, asparagus, and celery, and fruits like ever-bearing strawberries, rhubarb, garden lemons, and other varieties not previously raised. These were grown successfully. Grapes, peaches, plums, apples, and apricots have been planted by many people who had not thought these fruits would grow in their county. This is a dry-land section where practically no attention has been given to the home garden.

Everything tried, and given the proper attention, brought good results. Some failures were reported, due to lack of moisture and lack of care. Reports also show that, besides all that was used fresh on the table, from 25,000 to 50,000 quarts of vegetables and fruits were canned in this county last year.

If you like your vegetables crisp and fresh, grow them in your own back yard.

Plans of Representative Community Buildings Subject of New Bulletin

A community can "live around" from church building to church building, from schoolhouse to schoolhouse, from hall to hall, but so long as it lives that way it will never experience the distinct pleasure that comes from occupying a home of its own in the form of a community house. A good community house adds something to the life of the community, in the opinion of specialists of the United States Department of Agriculture, set forth in Farmers' Bulletin 1173, "Plans of Rural Community Buildings," now ready for distribution.

Before a community decides the question of erecting a building, says this bulletin, it should make a thorough study of the local situation. The study should show that an actual need for the building is felt by the various organizations of a public nature and by the people themselves. It should demonstrate that the building can and should be maintained as a permanent institution. After it has been decided to erect a building, numerous questions arise, upon which the bulletin gives much helpful information and many valuable suggestions, together with pictures and floor plans of a wide variety of community buildings now in actual use.

Make Survey of Community Needs.

The original study, it is pointed out, should not only determine the need of a community building but also the most desirable type. The bulletin advises that the building be large enough to serve the present needs of every member of the community and every organization, regardless of party, creed, or class, no matter how far distant they may be, and should be located at a place naturally frequented by all members of the community.

Raising the money for the undertaking is cited as one of the important problems. The amount to be secured can not be accurately estimated in advance. Department specialists advise that before an attempt is made to estimate the funds available a well-directed campaign of enlightenment be carried on throughout the surrounding country, with the object of making generally known the benefits to be derived from the erection of the building.

Every community will have its own particular uses for a building, and these can be determined only by the people themselves. A standard community building, however, it is pointed out, should have as a minimum these accommodations:

Accommodations of Every Building.

An assembly room, perhaps with movable seats, that can be used as a meeting place for the people or for various organizations. With the seats removed the room will be available as a gymnasium, as a game room, as a dining room, or for fairs and exhibits.

A stage on which lectures, plays, and various entertainments can be given and which may have a screen for motion pictures.

A kitchen where food may be prepared.

A place where lunches, suppers, and banquets may be served.

The more advanced communities would need, it is thought, other accommodations. These should be carefully estimated in determining the size of the structure. It is well to take future growth into consideration. Details of the various features of planning, constructing, and maintaining a community house are contained in the bulletin (Farmers' Bulletin 1173), which may be had upon request of the United States Department of Agriculture, Washington, D. C. Department Bulletin 825, "Rural Community Buildings in the United States," another publication of the department, gives the history of the community building movement.

GENERAL SUPPLY COMMITTEE REVISES LUMBER SCHEDULE

Black walnut and spruce lumber taken off the lumber schedule of the General Supply Committee during the war because the Government needed all that was obtainable for national defense purposes, have been restored to the schedule for the fiscal year 1922 by the advice of the Forest Service of the United States Department of Agriculture. This bureau cooperates annually with the General Supply Committee in the preparation and revision of specifications and the making of awards that cover lumber, mill work, boxes, and building material. Similar assistance is also rendered to the purchasing office of the District government, and the schedule of that office for the coming fiscal year has been revised in the same manner as that of the General Supply Committee.

The Forest Service plans to cooperate also with several of the large lumber associations with a view to including in both of these schedules most of the commercial woods of the Pacific coast in grades comparable with those listed for eastern supplies. This will result naturally in closer competition and should work toward greater economy in the purchase of the lumber needed to fill the requirements of the Government departments in Washington.

DEHORNING REDUCES INJURIES TO FOREST TREES BY CATTLE

Young red cedar trees in the Wichita National Forest are no longer injured by the herds which graze there. The solution of the problem was simple—the cattle are now dehorned.

One of the drawbacks to pasturing national forests has been the injury which was apt to result to the young growth from the grazing animals. After fire-protection methods on the Wichita were fairly well worked out and fires became rare instead of the rule, red cedar began to come in rather plentifully all over the forest under the oak stands. As the cedar began to reach a little size the supervisor of the forest noticed that it was being broken rather badly by cattle, both in the tops and in the branches. Cattle would hook their horns into the trees and twist and break the branches.

After some consideration the supervisor decided to ask the cattlemen users of the forest to run none but dehorned cattle on the Wichita. They quite readily agreed to this, and the result is very apparent. It is only occasionally now that red cedar is noted which has been twisted and broken by stock.

NEW SUGAR BEET RESISTANT TO CURLY-TOP LEAFHOPPER

Material progress in the selection of types of sugar beets that will be resistant to the curly-top leafhopper, a very destructive insect pest, is reported by specialists of the Bureau of Entomology, United States Department of Agriculture, who are investigating means for checking the pest's damage in California. A large series of mother beets, it is said, have been retained in cold storage during the last season and a great supply of seed grown last year will be available for the resistance tests.

Some very promising types, reports say, have been selected and are being planted in isolated places throughout Riverside County, Calif., in order that the necessity of using bags on the seed stalks may be obviated. Each plant of the resistant strains is separately inoculated with curly-top in order that there may be assurance that all are relatively immune.

"BETTER SIRES—BETTER STOCK" CAMPAIGN GOES AHEAD

What the United States Department of Agriculture, in Cooperation with the State Agricultural Colleges and Allied Agencies, Is Doing to Encourage Nation-wide Improvement of Live Stock.

RUNTS CAUSED BY NEGLECT AND IMPROPER FEEDING

"My nine years' experience in stock raising has been almost entirely with purebred cattle and hogs, and while some runts appear at birth they are not nearly so numerous as the runts caused by neglect and improper feeding and housing." This is the opinion of a Tennessee farmer in a letter to the United States Department of Agriculture.

Specialists of the department emphasize the fact that many animals that are undersized or small at birth often grow and develop into useful, profitable animals if a little special attention is given them soon after birth. This is especially true with pigs. Unless the small pig of the litter is thus provided for when quite young, very often it is not worth feeding to maturity. If the proper kind or amounts of feed are not given when very young, if required to compete with stronger or older animals for what they do get, born runts or those that are undersized will become more pronounced runts as they grow older. In this respect they resemble closely animals that are normal when young but later become runty from a lack of such proper feed and care which usually occurs about weaning time. After animals become runty or their growth retarded, undoubtedly it will take more feed to overcome this condition and grow them out.

"When pigs become runty," the Tennessee farmer adds, "they never become normal. I have estimated it requires at least 25 per cent more feed to put them in marketable condition than it does normal hogs. My experience with purebred dairy cattle is that fully 90 per cent of runts among cattle are caused by improper feeding and care. If the stock raisers of this country were educated in the proper feeding and care of live stock until they reached normal growth, the runts in live stock in the United States would be almost eliminated."

This statement not only further emphasizes the fact that it does not, broadly speaking, take more feed to prevent runt animals but does require considerably more feed to develop them once they become runty. Also that it rarely is advisable to feed out a pronounced runt. The only practical thing to do, therefore, is to prevent runting by providing the necessary feed, care, and management at the most critical periods of their growth and development. These periods with most animals are when very young and at weaning time.

HAS 100 PER CENT PUREBRED SIRES.

The township of Jackson, in Hardin County, Ohio, is entirely free from grade and scrub sires. In notifying the United States Department of Agriculture of this fact, Prof. John W. Wulchet, of the Ohio Agricultural Extension Service, adds, "This is the first township which has come to our attention that we feel satisfied is 100 per cent on the right side. No sire was considered purebred unless it could be proved that its sire and dam were registered."

The survey of sires included the principal classes of live stock, except poultry, and was made for advance credit by a student in the college of agriculture. The survey showed that the township included 165 farms, on which were 21 purebred boars, 26 purebred rams, 6 purebred beef bulls, 3 purebred dairy bulls, and 2 purebred stallions. No grade or scrub sires of any kind were found in the township.

MANY USE NEIGHBORS' SIRES.

That the use of good purebred sires does not necessarily involve ownership is shown by developments in the "Better Sires—Better Stock" campaign, which is improving the quality of domestic animals in the country. A Minnesota breeder in Kittson County raises four classes of live stock—cattle, horses, swine, and poultry. He owns a purebred bull but uses a neighbor's Percheron stallion and also a neighbor's purebred boar. To obtain poultry of improved breeding he purchased eggs from a breeder of standard-bred fowls.

Another live-stock owner in the same county states in a letter to the United States Department of Agriculture: "I do not own a purebred bull, but all cows are bred by a purebred bull owned by a neighbor." In these cases the quantity of farm live stock kept was relatively small and under such circumstances the arrangements stated are both simple and practical.

INCREASED USE OF BETTER SIRES REMOVES BIG ANNUAL TAX

The use of scrub sires is costing farmers of the Sunflower State $16,000,000 annually, say live-stock specialists of the United States Department of Agriculture. Less than one-tenth of the farms in Kansas are using purebred sires of any kind. Surveys were made in 20 representative counties with results showing the number of farms using purebred sires ranged from 8.3 to 11.6 per cent. Many communities and townships reported no purebred sires in use.

In one county surveyed there were two townships in which not a single purebred bull, stallion, ram, or boar was reported. In several counties where good purebred herds were found neighboring farmers were still using scrub sires. A large per cent of male offspring had been sold to go to other counties or States. In some communities an active breeder had placed purebred sires on the farms of many neighbors. For the most part farmers have failed to appreciate the advantages of using a purebred sire to increase the marketing returns from their live stock.

These conditions, announced R. W. Kiser, of the Extension Service, Kansas State Agricultural College, are responsible for the active Better-Sires-campaign now being waged in 20 counties and which will be extended to include all counties within the year. In every county object-lessons on the value of the purebred sire in improving farm live stock are to be found, and often on adjoining farms. Meetings arranged by the county agent through the county farm bureau and sponsored by the local live-stock improvement associations are held on these farms and the people attending see for themselves the difference between scrub sire and purebred sire offspring.

County agents directed by A. L. Clapp, the assistant county agent leader in charge of the project work, and assisted by the specialists of the Extension Service, are planning for intensive follow-up work in those counties where the campaign was conducted. Associations are being organized for the purpose of advancing the cause of better live stock. Bull clubs, cow clubs, calf clubs, pig clubs, boar clubs, sheep clubs, and stallion associations are in demand in every county.

Federal and State Marketing Officials Discuss Plan to Gain Close Cooperation

Plans for obtaining closer cooperation between State and Federal agencies engaged in marketing work were discussed at a conference of marketing officials of 15 States, committees, and officers of the National Association of Marketing Officials, and of the Bureau of Markets, United States Department of Agriculture, held recently in Washington, D. C. Various phases of the work were studied, the conference interesting itself particularly with the questions of standardization and inspection.

Emphasis, in the discussions, was laid upon the fact that the Federal bureau should outline the methods of investigating conditions in view of promulgating standard grades for fruit and vegetables, and that the State agencies should be charged with carrying out the plans and collecting data. With regard to grades established in certain regions having more or less similar conditions, it was decided that these grades should be identical and that the inspection service should be the same in all essential points. If the grades are not those officially established by the Federal department, they should be as nearly like them as regional conditions will permit, the conference held.

In discussing this phase of the work, Federal officials pointed out that it was not the policy of the Bureau of Markets to insist that any State adopt the Federal grades; but that the specialists wish to be considered as always ready to give their opinions as to the best thing to be done.

In addition to the standardization work on fruits and vegetables, keen interest was manifested by State representatives in hay standardization. During the conference, those especially interested in hay work visited the Federal laboratory at Alexandria, Va., where the hay standardization work is being carried on.

The subject of collecting and disseminating market reports received close attention, and a comprehensive report was made to the conference covering this work. It was pointed out that there were two types of market information which had to be provided. The first was defined as market news. This is of immediate importance and is used promptly by the managers of cooperative shipping associations, shippers, and dealers in distributing and selling farm products, it is said. The second type is the market report, which gives conditions, supply, demand, and other factors, the distribution of which does not require such rapid means of transmission as the first.

A report submitted on the use of the wireless in disseminating market news was considered with much interest by the members of the conference.

While the conference represented the views of only a few of the States and was chiefly the work of committees, the secretary of the association will prepare a full report with definite recommendations, which will be sent out to all the States for their information and approval.

VIOLATIONS OF GRAIN STANDARDS ACT

The Samuel Hastings Co., Cairo, Ill., entered pleas of guilty on February 25, 1921, to two informations filed in the United States District Court for the Eastern District of Illinois. The informations contained 13 counts alleging interstate shipments of grain by grade without inspection in violation of the provisions of the United States Grain Standards Act, administered by the United States Department of Agriculture. The defendant company entered a plea of guilty to both informations, and a fine of $25 was imposed on each count of the informations.

The annual value of the strawberry crop in the United States is said to be about $18,000,000. It is a crop, specialists of the United States Department of Agriculture warn, that must be handled with the greatest care to avoid loss.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended April 16, 1921:

Flytraps and Their Operation. Farmers' Bulletin 734.

Cabbage Diseases. Farmers' Bulletin 925.

The Beet Leaf-Beetle and Its Control. Farmers' Bulletin 1193.

Operating a Home Heating Plant. Farmers' Bulletin 1194.

The Use of Concrete Pipe in Irrigation. Department Bulletin No. 906.

Cooperative Grain Marketing: A Comparative Study of Methods in the United States and in Canada. Department Bulletin No. 937.

Farm Management in the Ozark Region of Missouri: A Study of the Organization and Operation of a Number of Representative Farms. Department Bulletin No. 941.

Influence of Winter Rations on the Growth of Steers on Pasture. Department Circular 166.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 734; Department Bulletin No. 906; Department Circular 166.

FARM-LABOR SITUATION IS NOW DECIDEDLY EASIER

(*Continued from page 1.*)

New Mexico: Supply is plentiful, but higher wages are demanded than the farmers can afford to pay.

North Dakota: Supply exceeds demand; wages noticeably reduced from a year ago.

Ohio: Supply generally equal to demand, though some complaint is still heard of wages asked.

Oregon: Supply appears to be plentiful, with wages greatly reduced as compared with last year. Need for hired farm labor reported much below normal.

South Carolina: Supply normal.

South Dakota: Supply more plentiful than a year ago. Farmers not employing as much labor as usual.

Tennessee: Supply plentiful in most localities, but wages remain higher than the farmers feel able to pay.

Texas: Labor sufficient for all requirements of cotton crop.

Virginia: Supply ample for demand, which appears to be less than usual.

Washington: Farm bureaus in many counties are arranging the wage scale for the coming season.

Wisconsin: Wages for single men are approximately $50 per month, as compared with $80 a year ago.

Percentage of normal supply of and demand for hired farm labor, to be read as index numbers:

Year.	Relative supply.	Relative demand.	Ratio of supply to demand.
1921	95.2	87.5	108.8
1920	72.4	105.3	68.8
1919	81.4	101.8	82.9
1918	72.9	101.4	71.9

A large proportion of the vast wealth created annually from the soil ultimately enriches the city instead of developing and improving the resources of the country.

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1921

Weekly News Letter

Published by the
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VOL. VIII. MAY 4, 1921 No. 40

FOREST PROTECTION WEEK PROCLAIMED BY THE PRESIDENT

Governors and Important Organizations Asked to Aid in This Movement.

Secretary Wallace Requests Observance of Week, May 22 to 28, to Bring Home to the People the Enormous Loss Caused By Forest Fires.

Forest fires during the five years ending 1920 devastated an area much greater in extent than that occupied by the New England States, and occasioned a loss of more than $85,000,000. Because the destruction of our forests by fire spells disaster unless the rate of burning is materially checked, Henry C. Wallace, Secretary of Agriculture, has written the governors of all States requesting their cooperation in the nation-wide observance of Forest Protection Week, May 22 to 28, recently proclaimed by President Harding. In this letter Mr. Wallace urges the governors to set apart this week for the purpose of such educational and instructive exercises as shall bring to the people the serious effects of the present unnecessary waste by forest fires.

Four of Five Fires Avoidable.

Human agencies, statistics show, were responsible for about 80 per cent of the 160,000 forest fires which occurred in the United States during the past five years, and could have been prevented by care and vigilance on the part of citizens. In addition to growing timber and settler's homes destroyed there was sometimes a heavy loss of life, as in the great Minnesota fire of 1918, where nearly 1,000 persons were either burned to death or suffocated.

This Forest Protection Week movement originated on the Pacific coast in 1920, was proclaimed by a number of governors in the West, and generally observed by citizens of various States. This year the importance of national forest protection was brought to the Secretary's attention by the Forest Service of the United States Department of Agriculture, with the request that the matter be laid before the President for consideration.

Cooperation in this movement is expected from State foresters, commercial and business organizations, educational institutions, societies, and individuals interested in the preservation of our national timber resources. The Secretary of Agriculture has written to the national presidents of the Kiwanis, Rotary, American Automobile Association, and other large commercial clubs, Boy Scouts of America, and to the president general of the Daughters of the American Revolution asking that they exert influence to have their organizations bring before the people of this country the serious effects of the present unnecessary waste by forest fires.

Secretary Wallace Writes to Governors.

The letter of the Secretary to governors is as follows:

"The President on April 7 issued a proclamation designating May 22–28 as Forest Protection Week, and urging the governors of the various States to set apart this week for the purpose of such educational and instructive exercises as shall bring before the people the serious effects of the present unnecessary waste by forest fires.

"Adequate provision for the safeguarding and renewal of our forests is of vital importance to the Nation. The magnitude of the area burned over during this period, 56,488,000 acres, is startling; it

(Continued on page 8.)

FARMER WANTS FAIR CHANCE.

The average intelligent, patriotic farmer is not asking for special privileges. If proper regulatory laws insure him a free and open field for the exercise of his ability, he will establish a place in the commercial world which will be not only a source of credit and profit to himself but also to the country at large. All the American farmer wants, and has a right to have, is an equal chance with other business men, a fair and just reward for labor performed. Every man in every business is entitled to a profit for the contribution he makes to the sum of human happiness, as happiness is represented in better living.

COTTON DUSTING PAYS ON HALF-BALE-TO-ACRE LAND

Increase of Approximately 40 Per Cent When Calcium Arsenate Is Used.

Either Horse Machine or Hand Dusters May Be Used—Cost is Moderate and Returns Reasonably Sure in Weevil-Infested Territory.

Because of the discouraging decrease in the price of cotton many growers have accepted the conclusion that dusting with calcium arsenate to combat the boll weevil will not pay them this season. Contrary conclusions are reached by experts of the United States Department of Agriculture who have made exhaustive investigations at the Delta laboratory for southern field crop insect investigations at Tallulah, La. They declare that wherever land will produce one-half bale of cotton per acre with the poison applied, dusting will prove profitable.

Figures prepared by B. R. Coad, in charge of the Delta laboratory, collaborating with Paul H. Sanders of the Southern Ruralist, indicate that wherever calcium arsenate is used intelligently in the boll-weevil infested regions the increased yield is approximately 40 per cent. These figures are based upon the records of the Delta laboratory. The improvement holds good on land yielding less than 200 pounds of seed cotton per acre, and on highly developed land of a large growing company, where the increase alone was more than 500 pounds of seed cotton per acre. This ratio of increase is presented as an established basis by which each farmer knowing his land, weevil conditions, and last year's experience can work out his own problem as to whether the poisoning is practicable.

Dusting Costs About $10 An Acre.

Data compiled by the Tallulah laboratory and several of the experiment stations covering tests in Texas, Louisiana, Arkansas, Mississippi, and Georgia, indicate that the cost of poisoning in 1920 was approximately $10 per acre. Prices of materials needed in the poisoning are

unsettled at present, with a downward tendency, so that it is impossible to make absolutely accurate calculation, but the figures given below for both cart and hand-gun dusting operations are believed to be conservative and may easily be revised should there be any fluctuation:

	Cost per acre.
Cost with the one-horse cart duster:	
20 pounds calcium arsenate @ 16¢	$3.20
Machinery charge—	
A cart duster, costing $125, will care for 50 acres and last at least 4 years; depreciation	.62½
Repairs, upkeep and interest (estimated)	.25
Team charge—	
A mule, rental $1.50, will cover 20 acres per night, 1 application; 4 applications	.30
Labor charge—	
A man, wages $1.50, will poison 20 acres per night, 1 application; 4 applications	.30
Total cost of poisoning, 4 applications	4.67½
Cost with the hand-gun duster:	
20 pounds calcium arsenate @ 16¢	3.20
Machinery charge—	
Hand gun, cost $17.50, will care for 5 to 8 acres, 4 applications, and is then worn out; depreciation	3.50
Labor charge—	
A man should poison 1 acre in 1½ hours, or full treatment of 4 applications in 5 hours, @ 15¢ per hour	.75
Total cost of poisoning, 4 applications	7.45

In all cases maximum current quotations are used and a reduction is possible. The machinery charge is based on the capacity use of the cart-type duster, but if a smaller acreage is dusted the cost per acre will not be greatly increased, as the depreciation each year will be less. With the hand gun, the figures assume that the apparatus will be worn out in a single season, but with proper care it will last longer, and the machines now made are more durable. One aluminum machine now on the market is regarded as practically indestructible by use.

Poisoning with a cart duster is estimated in the above figures to cost $4.67½ per acre, so that the minimum profit from poisoning may be set at $7.32½ per acre. If the yield should be a full bale per acre, it would bring $24, and as the poisoning cost would still be $4.67½ the profit would be $19.32½ per acre. On the same yield the profits of application by hand gun are placed at $4.85 and $16.85, respectively.

Buyers Will Be Protected This Year.

Many of the unsatisfactory results reported in scattered sections last year were due to imperfect machinery and improperly compounded calcium arsenate. Better machines have been developed by experience, and the scrutiny exercised by the Insecticide and Fungicide Board, with a number of stiff penalties, will practically protect buyers of calcium arsenate preparations from fraud this season.

The Department of Agriculture is doing all in its power to get in touch with prospective users of calcium arsenate, and advises them as to methods and equipment. Mr. Coad, in charge of the Delta laboratory, has made extensive tests of machines offered for use, and is ready to offer advice to purchasers of machines. The laboratory will analyze free a sample from any lot of poison purchased, the aim being to obtain a maximum efficiency in the fight against the boll weevil.

Any man of average intelligence who will follow the explicit directions worked out by Government experts, it is said, can properly apply calcium arsenate. Careful calculation shows that poisoning, intelligently done, will prove profitable on a half bale per acre yield, even should the price be as low as 12 cents per pound. This calculation claims 40 per cent of the half bale, 100 pounds, is due to poisoning. This gives a gain of $12 per acre.

With the low price of cotton and the present necessity of farmers diversifying their crops sufficiently to furnish their home supply of food, the department sees added necessity for the application of every means which will bring the largest yield from the smallest acreage planted, and in any case it emphasizes the slogan of the cotton-dusting campaign, "Do it right or not at all."

Sheep Raisers Warned to Watch for Stomach Worms—Simple Remedy Advised

With the approach of warm weather sheep raisers are warned by specialists of the United States Department of Agriculture to watch for stomach worms and put into practice every known preventive measure. The stomach worm, they say, is one of the most serious parasites of sheep, occurring over almost the entire world where there are sheep, cattle, and other suitable host animals. In the United States it is most plentiful in the South, where it is favored by abundance of warmth and moisture, but it is also quite common and serious in the Middle West and in low, wet areas throughout the entire country. It is present in smaller numbers and does less damage in the high, dry, and cool areas of the Rocky Mountain States.

Beware of Sheep That Are Dull and Unthrifty.

The first things noticed about sheep infested with stomach worms are dullness and lack of thrift. Later the skin becomes pale, as do the linings of the mouth and eyelids, which is due to impoverishment of the blood from the bloodsucking habit of the worms. Infested sheep also may have a swelling under the jaw, known as "bottle jaw."

Stomach-worm infection is spread by the droppings of infested sheep. The eggs of the parasites in the droppings hatch out and the young worms, which are microscopic in size, crawl up grass blades and are swallowed by sheep as they graze. In the stomach the worms become mature in about three weeks. If the fourth stomach, or rennet, of an infested sheep or lamb be examined soon after death, the stomach worms can be seen squirming about, slender, reddish in color, about an inch long.

A satisfactory remedy for this disease if used in time, the specialists say, is a 1 per cent solution of copper sulphate in water. A dose which has been found satisfactory is 100 mils (about 3 ounces) for yearling and older sheep, and half as much for lambs 3 months old or older. To make this solution, dissolve one-fourth pound of copper sulphate in 1 pint of boiling water, then add cold water to make a total of 3 gallons of the solution. This amount is sufficient to treat 100 adult sheep. The use of this remedy once a month during the grazing season will prevent or greatly reduce losses from stomach worms.

Young animals and uninfested sheep should be separated from older or infested animals. Pastures which have been used by infested animals are dangerous to young animals and uninfested ones. The first essential in preventive measures is to protect young animals, for they are more susceptible to parasitic infestation than older ones. Consequently, the safest pasture should be furnished to the lambs, the older sheep taking the more dangerous land, where it is necessary for sheep to go back to old pasture within a year.

Sheep Should Not Follow Cattle on Pasture.

In a plan of rotating pastures to keep down stomach worms, the sheep may be moved over cornfields, hayfields, and stubble of various sorts. When different kinds of stock are rotated on pastures, sheep may safely follow horses or swine, but not cattle or goats, as the latter may be infested with stomach worms and a number of other worms common to sheep, goats, and cattle.

SUCCESSFUL MILK CAMPAIGN PUT ON IN SOUTHERN CITY

Greenville, S. C., Teaches Use of More Milk in Interest of Better Health.

Survey of School Children Shows Many Use No Milk, Are Undernourished, and Backward in Their Studies—Gospel of More Milk Carried to Every Child.

What a city can do toward increasing consumption of milk as a means of improving health is strikingly shown by the results obtained through the milk campaign held in Greenville, S. C., March 14 to 19. This campaign, which was initiated by the State board of health of South Carolina, is one of the first ever held in the South. The city council of Greenville, realizing the possibilities for good that such a movement might carry with it, agreed to pay all the expenses of the campaign, while merchants, manufacturers, and civic organizations gave the fullest cooperation to the extension forces of Clemson and Winthrop Colleges and to the representative of the Dairy Division of the United States Department of Agriculture, who aided in putting over the campaign.

School Survey Shows Undernourishment.

The campaign was unique in several respects. For one thing, every child in the public schools and in the mill schools was reached directly by speakers, who were furnished largely by the two colleges, and by local nurses. The school work was considered especially important in view of the fact that a survey of 3,114 children in the Greenville schools had shown that 21 per cent of the white children and 14 per cent of the colored children were 10 per cent or more under weight. The average of both was 19.2 per cent.

A dietary survey of the 2,031 white children brought to light the fact that only 44 per cent of them were drinking milk daily, and that only 32 per cent were using as much as a pint daily. Forty-four per cent were drinking tea and coffee daily, and 13 per cent got no milk at all. Among the 1,203 colored children it was found that only 23 per cent were receiving milk daily, and only 11 per cent were getting as much as a pint.

In view of the undernourishment prevalent among the children, these figures pointed to the fact that not enough attention was being given to those foods which are necessary to the development of growing children, and it was believed that a greater use of milk in the diet would tend to improve this condition.

It is interesting to note that of the 13 star pupils in one school all were drinking milk, except one who was barely over the line.

The school was only one of the methods used to put over the message of milk for health. The club women of Greenville arranged for two movie shows of special milk films for children; and at every performance of all moving-picture theaters in the city a milk film was shown. Fifteen merchants contributed windows for exhibits, one of the most interesting of which illustrated the various tests used by the health department in safeguarding the quality of the milk supply, including the sediment, bacteria, and butterfat tests. Local business houses contributed a large amount of advertising space to the story of milk.

Final figures on the results of the campaign in increasing the use of milk have not been received, but the indications are that the increase will be large. One dairyman reported that after the campaign started the calls for milk had doubled, and that he had not been able to meet the demand; while two others stated that they had been forced to buy more cows, so great had been the demand for milk.

MUNICIPAL CAMPS INCREASE IN NATIONAL FOREST PARKS

Free permits for eight municipal recreation camps in the national forests of California have been issued by the Forest Service of the United States Department of Agriculture. This State is taking the lead in establishing these camps, where the residents of the cities which maintain the camp may obtain a summer outing at cost.

Last year four such camps were operated in the California national forests—two by the city of Los Angeles and one each by Sacramento and Oakland. These four represent an investment of $70,000, and nearly 5,000 guests were accommodate.

This year Los Angeles will have a third camp in operation, and San Diego and Fresno and Riverside Counties expect to open camps also. In addition to its camps, the Los Angeles Playground Department organizes and supervises 2-week hiking outings in the Angeles Forest. Three of the eight camps are in the Angeles, two in the Cleveland, and one each in the Sierra, Stanislaus, and Eldorado National Forests. The camps are from 25 to 150 miles from the municipalities that maintain them.

Only residents or taxpayers of the municipalities that operate the camps are eligible as guests, and, because of the low cost of the outing, each camper is required to render on an average one hour's daily service as outlined by the director in charge, and must also furnish his own bedding. Guests are well housed, fed, and entertained. The following rates for a 2-week outing, including transportation, were in effect last year:

National forest.	City.	Name of camp.	Miles to camp.	Cost.
Angeles.....	Los Angeles.	Seeley.....	75	$12.75
Do.....	....do.....	Radford.....	90	14.25
Stanislaus...	Oakland....	Oakland....	150	18.00
Eldorado...	Sacramento.	Sayles Flat.	90	25.00

These rates were all for adults, and the rates for children under 10 were from 50 to 60 per cent of the above. The lower rates at the Los Angeles camps are probably accounted for by the fact that these camps have been in operation for several years, while 1920 was the first season for Sacramento and Oakland. The Los Angeles camps accommodated over 3,500 of the 5,000 guests at the municipal camps in the national forests of the State. The business men of Sacramento are so well pleased with their municipal camp that they are raising a fund of $10,000 to be donated to the city to build permanent cabins at the camp for sleeping quarters, such as are already installed at the Los Angeles camp.

COMMUNITY SANITATION PROJECT.

Six communities in Clark and Lincoln Counties, Nev., have included in their program of work for 1921 community sanitation projects, setting as a goal two clean-up days and the securing and enforcing of definite rules in regard to cleanliness of yards, lots, outhouses, spring water, ditches, and streets.

Four of these communities are composed of people who live in small villages where there is no town organization. The women, under the direction of home-demonstration agents of the United States Department of Agriculture and the State Agricultural College, are taking steps to form some kind of a town organization in order to be able to make and enforce ordinances for health and to make improvements of various kinds.

As there is no sewage system in these communities, the water is very unwholesome, being brought from springs a long distance away through open ditches. The clean-up program will include the springs and ditches.

Weekly News Letter

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John L. Cobbs, Jr., Chief

PRESS SERVICE
Dixon Merritt, Assistant in Charge

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UNITED STATES OUTBIDS ENGLAND FOR CANADIAN FURS

The United States has far outstripped England as a purchaser of undressed furs from Canada, comparisons made at the Bureau of Biological Survey, United States Department of Agriculture, show. From 1914 to 1920 the exports of undressed furs from Canada to the United States increased from $2,100,000 to $16,500,000, while those to England rose from $3,000,000 to $3,900,000. The export figures for 1919 were to England $3,700,000 and to the United States $7,000,000.

The change, it is said, is due chiefly to the effort made by the fur traders in this country to make the United States the leading fur market in the world and also to the inability of English buyers to compete with them. In 1920 Canada's exports of undressed furs were valued at $20,600,000, compared with $13,500,000 in 1919, and $5,500,000 in 1914. Its imports in 1920 were $10,800,000, compared with $3,400,000 in 1919, and $1,200,000 in 1914.

CLEAN-UP WEEK A FEATURE WITH MODERN TOWN DWELLERS

The spring clean-up time, now a regular annual feature of town and city life, can not be observed on farms in the same season because of more pressing work. Efforts are made constantly, therefore, to encourage picking up the odds and ends about the farms in the slack time between fall planting and early spring. In many towns, however, the home demonstration agents give their organizing ability to furthering such work in the early weeks of spring.

In Spokane, Wash., a campaign called the "Alley and Back Yard Beautiful," began in 1919 to extend through five years. This work was initiated and guided by the city home demonstration agent, whose reports show excellent progress. Newspapers give constant publicity to the work, urging the repairing of screens, windows, and outbuildings, and the planting of brubbery, trees, and flowers. In 1920, in the city of Spokane, more than 8,000 grape cuttings and rooted plants were set out. The chamber of commerce supplied thousands of circulars drawing attention to the duties of citizenship, particularly for home owners. In many yards, as a result, there are to be seen purple grapes, the stately hollyhock, the modest foxglove, and many other flowers growing inside freshly painted fences. In one yard, 50 by 142 feet, the hitherto neglected vines produced more than a ton of grapes last year. In the work this spring Spokane is being districted for a beautification campaign to be conducted precisely as the Liberty Loan campaigns were carried forward during the war, each district under a captain, with a team, reporting regularly on conditions.

DANGER OF OAK LEAVES POISONING STOCK IN SPRING

Oak leaves, if eaten continuously by cattle, produce a sickness which frequently proves fatal, investigations conducted by specialists of the United States Department of Agriculture show. Most oak-leaf poisoning, the specialists say, occurs in the spring, for at that time there is a scarcity of green forage on many ranges and the craving which stock have for green food leads them to eat the leaves in excessive amounts. In order to cause sickness, however, oak leaves must be eaten almost exclusively. If eaten with other feed, the animals are not injured. It has been found experimentally that as small a quantity as 3 pounds daily of alfalfa hay fed in connection with oak leaves prevented poisoning.

Observations on the range and experimental feeding both show that some cattle may eat oak leaves for a long time with no definite bad effects, and some will even eat them exclusively with no harm. Generally speaking, those that are injured show the results only after eating a considerable quantity through a rather prolonged period, usually from 16 to 35 days. The specialists point out that the oaks on many ranges furnish a most important element in summer feed when additional sources of forage are available, but they urge that care be exercised during the spring that cattle be not admitted to summer range at too early a date, for oak leaves are well advanced before the appearance of the grasses.

CALIFORNIA CITRUS FRUIT SHIPPED BY WATER ROUTE

Twenty-five carloads of lemons that had traveled from California by boat by way of the Panama Canal were recently successfully marketed in New York City. Citrus fruits are usually shipped from California to eastern markets by rail. Many studies of rail shipments have been made by specialists of the United States Department of Agriculture, and refrigerator and heater cars have been designed to facilitate this form of transportation. Investigations of the possibilities of shipping fruits by water, both across the Atlantic and through the Canal, are also being made. This recent shipment was the second to be studied by representatives of the department. In addition to the fruit marketed in New York the shipment included a car of oranges and five carloads of lemons which were sold in Philadelphia.

The initial shipment of citrus fruit from California by the water route was made in January, and was accompanied by a representative of the department. The cargo in this case was loaded at San Pedro, Calif., and sent to Philadelphia and Baltimore, where it arrived in a highly satisfactory condition. A prejudice exists against cold-storage lemons, so this fruit is usually transported under ventilation without refrigeration. Carrying lemons through the heat of the Canal Zone without refrigeration constitutes a severe test. This, combined with the fact that the trip lasted 22 days, gave ample opportunity to study the limitations and possibilities of the water route. Conclusions indicate that it may be possible to transport lemons by this method, but that refrigeration will be desirable for the proper shipment of oranges.

OREGON FARMERS POOL THEIR WHEAT.

Signed agreements for pooling approximately 1,000,000 bushels of wheat have been obtained by a cooperative grain growers' association formed in Oregon for the purpose of fostering and encouraging the business of marketing wheat, for reducing speculation, for stabilizing markets, and for cooperatively handling the problems of the grain grower, according to a report to the United States Department of Agriculture.

COUNTY AGENTS CARRY GOSPEL OF BETTER FARMING

Some Instances from Here and There That Show Work of Extension Men

COUNTY AGENT'S GOOD WORK AVERTS MOTOR-FUEL FAMINE

A county agent with his wits in good working order can be about the most valuable person in a farming community. Evidence of this was shown in Umatilla County, Oreg., last summer in circumstances likely to arise again in any part of the country, says the United States Department of Agriculture. Late in the spring stocks of motor fuel for tractors and trucks were so low that plowing could not be completed, and alarm was felt regarding a supply for harvest uses. In some parts of Oregon this fuel oil was being rationed out. Distillate had been exhausted.

In this crisis the county agent, with the help of the State leader's office, located a supply of distillate. One hundred and eleven farmers joined in a cooperative movement and pooled their orders. Banks were instructed to honor the demands on the accounts of those in the pool, and a first order of 12 cars, 100,661 gallons, of distillate was distributed in May and saved the farmers more than $9,000. An assistant was engaged, who gave his entire time to the project, a fraction of a cent a gallon being charged locally to pay expenses and salary.

In June two more cars, and in July eight cars were distributed, a total of 285,881 gallons for the three months. The saving through this activity was estimated to be $15,000 or more in this one county. Other counties took up the idea and recorded large savings.

COUNTY AGENTS DISTRIBUTE MANY FARM ACCOUNT BOOKS

County agents in the 33 Northern and Western States distributed last year 71,642 farm-account books, according to figures recently compiled by the United States Department of Agriculture. Specialists of the department say that this number represents approximately one-fourth of the total number of farmers who have requested the account books during the year prepared by the extension service, as a large number of banks and commercial organizations assisted in the distribution of account books.

During the winter months farm-management specialists and many county agents have held farm-accounting schools at which farmers were shown the value of keeping accounts of their farm operations, and methods were outlined whereby such accounts could be simply but accurately kept. Reports from agents indicate that those attending such schools have become greatly interested in keeping farm accounts when they learn through practice how to use the records in studying the efficiency of their farm business. When farmers see that a complicated system of accounting is not necessary in order to study their business, they are anxious to secure account books and keep a record of their farm operations.

PORK DAY IS A BIG EVENT FOR FARM BUREAU MEMBERS

Pork Day is one of the big annual events of Kings County, Calif. It comes in October usually. In this contest the farm bureau center is the unit, and every farm bureau center in the contest advances one carload of hogs to be exhibited and rated by an expert judge. Every farm bureau center must have at least six consignors to the load, thus preventing any big concern from exhibiting a carload. In the contest last fall six farm bureau centers as well as a boys' pig club took part in the contest. Ten carloads were auctioned in addition to seven cars that had been in the contest.

The county agent leader says in his annual report to the United States Department of Agriculture: "There seems to be no more convincing argument to a hog producer than to see the actual sales of his animals take place and to know the difference in price paid for a superior quality animal."

Farm bureau sales of this kind were started in California in 1916 on the initiative of the county agent of Kern County. They are now becoming common in all pork-producing counties of the State. There were 175 such sales in 1920, with sales aggregating $1,400,000.

Men who act as field agents must be practical farmers. There is no use in sending a carpenter to tell a tailor how to make a coat, even if the carpenter happens to be pretty well read up on coats.—*Dr. Seaman A. Knapp.*

ARIZONA COUNTY AGENTS MAKE INTERESTING REPORTS

If white farmers in Arizona would adopt some of the age-old methods of the Indians they might, it is declared by county agents, be more successful in growing corn. The Hopi Indians are said to continue successfully growing corn, taking advantage of factors which white men seem to ignore, such as careful diversion of flood waters, planting the corn in hills a great distance apart, with a number of stalks in the hills. These methods, of course, have come to them through generations before white men knew of the plant.

Alfalfa seed can be grown in Yuma County of a quality which, probably, is unequaled anywhere in America, according to reports received by the United States Department of Agriculture. This, it is said, is due to a limited rainfall averaging only about 4 inches a year. The county agent has given a large part of his time to work in connection with the certification of hairy Peruvian alfalfa seed. This work is done in cooperation with a local organization which is incorporated and sells the seed in a business-like manner. The certified seed has gained a reputation which makes it profitable to the producer in comparison with other seed sold in the same markets.

The chief problem probably of the county agents in nearly all the counties of Arizona is in connection with efforts to induce farmers to grow a greater diversity of crops in order that labor may be employed more economically throughout the year, and to eliminate expensive freight rates on articles of consumption shipped from outside the State. The old temptation to grow only one crop has brought about conditions which are now reacting more severely upon farmers and all concerned than is possible where diversification is practiced.

County agents and home demonstration agents are proving that a successful project must include plans for preserving or marketing the product after it has been grown. This probably holds good in Arizona more than in most other States because that State is farther from centers of consumption. With a limited population at home to feed it is often unwise to permit an increased production without first giving consideration to plans for profitable handling and disposing of the marketable surplus at the year's end.

Department Experts Tell Housewives How to Distinguish Lamb from Mutton

Unless the housewife knows the difference between lamb and mutton, which few housewives do, she is apt to get mutton when she thinks she is purchasing lamb, say marketing experts of the Bureau of Markets, United States Department of Agriculture. Not only will she get meat of inferior quality but she may pay lamb prices for the carcasses of yearlings and sheep, the wholesale prices of which are considerably lower than for lamb.

With such a difference in price between mutton and lamb, it is vastly to the financial interest of the housewife to be able to recognize the various kinds of meat, and the following pointers by Bureau of Markets dressed-meat experts may help her to do so:

Distinctive Points of Mutton Carcasses.

Generally speaking, a mutton carcass is heavier than one of lamb. The color of the meat is one of the best indications of age. The lean meat of lamb ranges from pink to light red, but as the animal grows older the color of the meat turns to a deeper red. This is also true of the thin strips of lean meat covering certain portions of the outside of the carcass. The bones in lamb are smaller in proportion to the meat and usually present a reddish appearance. The bones in a matured sheep are not only larger but whiter and more flinty, both in appearance and texture. If the whole carcass can be seen, the ribs in a matured sheep will show a much more pronounced spring or bow, whereas those of a lamb are straighter, giving the side of the carcass a more compact and less distended appearance.

One of the standard methods of distinguishing lamb from mutton is to inspect the first or ankle joint of the front leg. In dressing a lamb the knuckle, or end of the shank bone, is broken off, and the end of the bone presents a ridged and porous appearance. This is soft and moist to the touch and carries a decidedly red color. As the animal grows older the bone becomes harder and whiter and the knuckle becomes more firmly attached to the bone. This is the condition during the yearling stage. The knuckle still breaks off, but when this occurs the end of the shank bone presents a hard, rough appearance and has lost much of its red color.

When the lamb has passed through the yearling stage and has become a sheep the bone has become so ossified or hardened that the knuckle no longer breaks off the end of the bone and separation of the foot from the shank is made at the ankle joint. Thereafter the knuckle normally forms the extreme end of the foreleg and presents a hard, smooth, white surface with two prominent polished ridges. In the case of mutton the knuckle is frequently broken off by mechanical means in order to give the carcass a resemblance to yearling or lamb, but in these instances the bones are decidedly jagged and splintered and lack the redness which is characteristic of lamb and yearling carcasses.

It requires some study and application to learn to distinguish the various classes and grades of dressed meat, but everyone whose duty it is to provide wholesome, nutritious meat for family consumption and to provide it economically should be able to distinguish good meat from that of medium or inferior quality, whether it is seen in the packing-house cooler, on the butcher's block, or in the home.

FOREST SERVICE MAKING SURVEY OF DESTRUCTION OF PILING

Wharves in the San Francisco Harbor have been damaged to the extent of $15,000,000 in the past two years by wood borers. The amount of loss from this cause on both Atlantic and Pacific coasts, if it could be estimated, would undoubtedly run into the hundreds of millions. For the purpose of ultimately checking these depredations the Forest Products Laboratory at Madison, Wis., has started a survey this year.

The log used for a pile is strong and sound when it is first driven, and the wood borer is very weak and quite insignificant in appearance, but the life and usefulness of the former is short when its small enemy attacks it. A ship ties up to what appears to be a perfectly sound and trustworthy California wharf. During the night a rather strong offshore breeze springs up and the next morning the ship is sighted out in the bay towing after her a large part of the quay. The supposedly solid wooden piles on which the wharf was built had been bored out by the teredo, a worm with a hard shell auger for a head, and when the ship tugged at her hawsers the piles had snapped off like pipe stems.

The teredo, when young, bores a very small hole, thus gaining entrance into a pile unnoticed. Once inside he grows rapidly and can so completely honeycomb the pile in a few months that it will not even support its own weight. Quite the opposite from the teredos in their method of attack are the marine borers called limnoria. They begin on the outside of the piling and in less than a year make it look like a half-eaten stick of candy. When both these pests get to work on the same pile it usually lasts about six months.

The Forest Products Laboratory has recently proposed a plan for the study of the marine-borer problem, covering the entire coastal waters of the United States. It has just completed the first unit of its program, which has been a survey of the San Francisco Harbor, in cooperation with the American Wood Preservers Association.

The most promising method of protection which has been tried by the laboratory is that of treating the piles with creosote. Properly creosoted wood piles are very distasteful to both types of wood borers and have remained unattacked by them for periods of 25 years, while neighboring untreated piles lasted but from 6 months to 2 years.

FARMERS SPEND MUCH TIME TO KILL OR CONTROL WEEDS

Fighting weeds occupies about 30 per cent of all the time a farmer spends in cultivation of crops, according to experts in the United States Department of Agriculture, who recently have been conducting a weed survey. Special attention has been given to the best methods of conquering some of the worst weeds, and the following publications on their eradication or control may be obtained by writing to the department.

Farmers' bulletins: 610, Wild Onion; 660, Weeds in General; 833, Wild Oats in Hard Spring-Wheat Area; 945, Bermuda Grass; 1161, Dodder; 1166, Poison Ivy and Poison Sumac; 1002, Canada Thistle.

Department circulars: 108, Chicory; 130 (5 cents a copy), Hawkweeds or Paint Brushes.

Department bulletins: 511 (10 cents), Farm Practice in the Cultivation of Cotton.

In addition to these the following multigraphed leaflets on special weeds may be obtained by writing direct to Forage Crop Investigations, Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C.: Chemical Weed Killers; Eradication of Nut Grass; Wild Carrot; Crab-Grass; Killing Dandelions in Lawns; Sheep Sorrel; Chickweed in Lawns; Eradication of Quack Grass; Wild Morning Glory, or Bind-Weed; Honeysuckle as a Weed; Perennial Sow Thistle.

Bull Associations Promote Dairy and Community Interest Where Little Existed

An example of how bull associations, organized through the help of the United States Department of Agriculture, act as a wedge to stimulate dairy interest and promote better dairy methods in a community is illustrated by the work which has been done in Spartanburg County, S. C. Five years ago little dairying was done in this county, according to dairymen of the department, but now the industry is making rapid progress and up-to-date methods are being practiced largely as a result of the organization of a bull association.

Interest Aroused by Efforts of One Breeder.

The interest in dairying dates from the beginning of the pure-bred bull movement in the vicinity of Campobello in 1916. At that time a breeder, in the hope of starting an interest in better stock and creating a demand for his animals, presented a pure-bred bull to the community. Little interest was taken, and the gift was accepted with reluctance. The community was made up of small farms and there were few cows.

Following this a dairymen's picnic and exhibition of live stock was held, and as a result of extension work carried on by the Dairy Division of the department in cooperation with Clemson Agricultural College more people became interested and bought cows. In 1917 a cooperative bull association was organized, from which developed a live-stock show, and the members of the association developed a keen interest in comparing the dairy animals they raised.

Another show was held in 1920, at which prizes offered by merchants and bankers consisting of cash, merchandise, and savings accounts were awarded. One of the features of the show was a program of short talks on local problems by the county agent, leading farmers, and representatives of the commercial club and the State Jersey Breeders' Association. As an indication of the interest that was aroused those attending the show voted unanimously to hold a community fair next fall, to include not only dairy stock but other agricultural products.

TO PREVENT DOOR FROM STICKING.

A door which sticks to the frame every damp day is not conducive to unruffled feelings on the part of those who use it. The Forest Products Laboratory of the United States Department of Agriculture at Madison, Wis., has recently made public a method which obviates the difficulty.

Wood specialists there say that the fact that the top and bottom edges of a door are practically always left unfinished is largely responsible for its troublesome habit of swelling and shrinking. The exposed ends of the vertical stiles give the most bother, because wood picks up or gives off moisture more rapidly through surfaces cut across the grain than through those cut parallel to the grain.

If the doors in a house are to shut easily and fit tightly, it is important that their top and bottom edges be protected by paint or varnish. If it is necessary to refit the door after it is hung, the freshly exposed surface should be refinished at once.

The great force that readjusts the world originates in the home. Home conditions ultimately will mold the man's life.—*Dr. Seaman A. Knapp.*

PNEUMATIC TIRES REDUCE IMPACT FORCES ON ROADS

Impact—the force resulting when a truck wheel strikes the surface of a road—depends largely upon the kind and condition of the tire used on the wheel, the Bureau of Public Roads of the United States Department of Agriculture reports after a series of extensive investigations on the subject.

When roads were built to carry the traffic of a few years ago the actual weight or speed of the load was only generally considered. Much attention was paid to the question of whether the traffic was equipped with steel or rubber tires, but a definite analysis of the surface and supporting conditions of the road and a determination of destructive forces were not deemed necessary. The transition from horse-drawn to automobile and truck traffic has changed the surface and strength requirements of the road of to-day. When the realization came that this heavy and severe traffic was here to stay and that roads would have to be built according to a very careful and thorough design in order to carry this traffic it was found necessary to study very definitely all the forces to which a road is subjected. For two years the Bureau of Public Roads has been working on the problem of obtaining the value of the impact forces on roads.

Some high points in their report recently made are:

Thin or worn solid rubber tires, even though they be very wide, produce very high impact forces.

Pneumatic tires offer the greatest influence in reducing impact forces, and with their use the impact increases only very slightly with the speed of the truck.

Cushion tires, that is, tires having a degree of softness and deflection between solids and pneumatics, offer corresponding advantages in reducing impact.

Impact increases with the speed of the truck, but it can not be said to increase according to any constant ratio or power of the speed.

Although heavy unsprung weight may give higher impact than lighter unsprung weight, it can not be said that this is the major controlling factor.

The relative destructive effect produced by light-weight, high-speed trucks and heavy, slow-moving trucks has not been determined by these tests. They do, however, indicate that equal impact may be obtained under some conditions.

Impact may be as high as seven times the static load on one rear wheel when a solid-tired truck strikes a 1-inch obstruction at 16 miles per hour, an average value being about four times. For pneumatic tires the maximum impact value is probably not more than one and three-fourths times the load at one rear wheel, and an average value is not more than one and one-fourth times the load.

URGED TO USE CHURN NUMBERS.

The use of churn numbers, so that the receivers of butter can more readily sort out separate churnings, is urged upon creamery men by food-products inspectors of the Bureau of Markets, United States Department of Agriculture. In a lot of butter recently examined by these inspectors the score varied from 88 to 92. As no churn numbers were shown, the only way the receiver could separate the butter was by examining every tub. If the churn numbers had been shown, it would have been a simple matter to separate the various churnings and sell them according to score.

It is not possible to take time to examine every tub, so the butter is sold according to the samples taken and at a discount if the samples vary widely. If there should be just one poor tub in the shipment and the sampler happens upon it, the whole shipment would suffer, while if churn numbers are used only the tubs in that churning would receive the lower score.

Is There a "Betty" in Your Home?—Device to Assist Home Dressmakers

For years the thing that bothered women in making their own dresses was the difficulty encountered in getting the garment properly fitted. They had to take some one's word for it usually, or if they went to a dressmaker they were obliged to have several try-ons, and this took time that should have been used for other things.

Then came "Betty." The home demonstration agents sent out by the State agricultural colleges, in cooperation with the United States Department of Agriculture, introduced Betty to thousands of farm homes, and also to other thousands in towns and cities. Betty is a dress form made of strips of gummed paper tape molded on the figure over a tight-fitting undervest. This home-made form is, naturally, an exact replica of the figure.

Popular from the Start.

The idea was instantly popular. Every State in the Union now has Betties by the hundreds, and the reports received by the Department of Agriculture show they have not only saved money for the owners but they have caused women and girls to see themselves as others see them, to straighten up, to stand with the shoulders back, to avoid the slouchy attitudes too common among human beings. "Well," exclaimed a large fat woman in a group, "that's the first time I ever saw my back as it really is."

In Merrimac County, N. H., 631 Betties were made last year by farm women directed by home-demonstration agents. The actual cost of these forms was $590.90. The women of Hillsboro County, N. H., made 468 Betties in 1920.

Regardless of how the family on the farm may be situated financially, it is frequently impossible to secure satisfactory ready-made clothing, and much of the family sewing must be done at home. Every woman knows this represents much work, but few men realize just how much of this work is done by their faithful partners. Here is a verbatim report sent in by a home-demonstration agent showing what one farm woman in Illinois did for her family in 1920 in the way of sewing, making over, or creating from new materials:

Year's Sewing By One Farmer's Wife.

Garments.	Home cost.	Store cost.	Saving.
9 boys' shirts [1]	.....	$13.50	$13.50
2 boys' silk shirts [2]	.....	6.00	6.00
2 suits [2]	$2.35	50.00	47.65
1 pair knickers [2]	.60	5.00	4.40
1 man's silk shirt	10.00	15.00	5.00
1 evening dress	10.00	45.00	35.00
1 silk sport skirt	6.00	12.00	6.00
1 brown organdie	8.50	30.00	21.50
1 gingham dress	6.00	10.00	4.00
1 blue taffeta	18.00	50.00	32.00
1 blue serge	4.00	35.00	31.00
1 suit made over	.....	50.00	50.00
1 woman's sniickers	3.75	6.00	2.25
Total	69.20	327.50	258.30

[1] Made from Dad's old shirts.
[2] From Dad's old suits.

Work by home demonstration agents among the foreign population produced interesting and valuable results. At Paterson, N. J., last winter a Syrian woman found she had enough material in the shawllike headdress she wore in her native land to make an entire dress for herself. Her success induced many others to join in the home-demonstration work.

SEED-POTATO PEST ACTIVE IN NORTH CAROLINA FIELDS

A very serious outbreak of the seed-corn maggot, or bean fly, in seed potatoes in the eastern part of North Carolina, covering Pitt, Tyrrell, Beaufort, and Pamlico Counties, has been reported to the United States Department of Agriculture through the insect-pest survey work being carried on by the Bureau of Entomology. Damage from the pest was first reported late in March, and the insect is still at work, the maggots attacking the seed potatoes in the soil before they sprout.

Careful counts made by entomologists in the infested fields have found that 85 per cent of the seed has been destroyed, which has necessitated replanting or abandoning the crop. It is estimated that in the infested region the crop will be reduced 50 per cent by the depredations of this insect. The infested region lies in the low coastal plain and has a generally sandy loam soil. The weather this spring has been abnormally warm in that region, especially since March 1.

The insect, according to entomologists of the Department of Agriculture, is found in practically all sections of the United States, and much investigational work has been done to find a remedy for its destructive attacks on seed potatoes. No single remedy, however, it is said, has been found that will wholly check the pest.

UTAH WOMEN BUDGETING FARM-HOME EXPENSES

One of the most interesting activities included last year in the home demonstration work in Utah was the home-budget project carried on in Salt Lake County. The work started about two years ago in Salt Lake City, but during 1920 was extended into the rural communities. Seventy women kept daily records for the purpose of determining how much of the food of the family was produced on the farm.

Some of the summaries obtained after keeping these records for six months or more, says the United States Department of Agriculture, are of especial interest. It was found, for instance, from the records that 54 per cent of the income of the rural families in that county is spent for food. The farm produces 68 per cent of all the food used by the family; 66 per cent of the meat; 98 per cent of the eggs; 81 per cent of the dairy products; 42 per cent of the fruit; 74 per cent of the cereals; 59 per cent of the vegetables; and 56 per cent of the fats.

FOREST PROTECTION WEEK PROCLAIMED BY THE PRESIDENT

(*Continued from page 1.*)

represents an area greater than that occupied by the State of Utah. Of the 160,000 fires that occurred over 80 per cent were due to human agencies, and could have been prevented by care and vigilance on the part of citizens. Loss of life was not infrequent, as in the Minnesota disaster of 1918, where nearly a thousand persons were either burned to death or suffocated. In detecting and suppressing forest fires the Forest Service of this department spends over a million dollars each year, and States and private individuals an even greater sum.

"We have been thoughtlessly permitting the destruction of our forests by fire. This spells disaster unless the rate of burning is materially checked. The menace of a future timber shortage threatens to become a present economic fact. Not only as sources of permanent supplies of timber but also as conservators of water, forage, and other natural resources, our forests are essential to our industrial and social welfare.

"I realize that your interest in this matter is as great as my own, and am sure you will do everything you can to bring the President's proclamation conspicuously to the attention of your people."

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CHINA'S GREAT FAMINE RESULT OF DEFORESTATION

Once Fertile Country Now Subject to Frequent Droughts and Floods.

Mountains Stripped of Trees and Undergrowth Allow Rains to Run Off Rapidly—Famine Comes in Seven Out of Ten Years—Reforestation Not Practiced.

The ruthless destruction of their forests by the Chinese is, according to foresters of the United States Department of Agriculture, one of the reasons why famine and plague to-day hold this nation in their sinister grasp. Denudation, wherever practiced, leaves naked soil; floods and erosion follow, and when the soil is gone men must also go—and the process does not take long. Forests, it is pointed out, not only play an important part in the distribution of mankind over the earth's surface, but also deeply affect his spiritual, physical, and economic life. A country that recklessly wastes its natural resources faces ultimate poverty and decadence. History is full of such examples.

Reforestation Not Practiced in China.

In the provinces of Honan, Shensi, and Chihli, China, over an area some 100,000 square miles in extent, several million people are starving. The immediate causes of the famine were disastrous floods followed by long periods of drought, which resulted in the failure of three successive crops.

The Great Plains of eastern China, occupied by the first Chinese of whom history tells, were centuries ago transformed from forest into agricultural land. The mountain plateaus of central China have also, within a few hundred years, been utterly devastated of tree growth, and no attempt made at either natural or artificial reforestation. As a result, the water rushes off the naked slopes in veritable floods, gullying away the mountain sides, causing rivers to run muddy with yellow soil, and carrying enormous masses of fertile earth to the sea. "Beware of the mountain water," read signs in many canyons of China, posted as a warning to travelers against the sudden rise of torrents during storms.

This lack of forest cover has made possible many of the factors that have brought disaster to millions of people of China this year. The tree-covered mountains formerly absorbed a considerable portion of the annual rainfall and let it escape by slow, regular seepage during the dry season. Now that there are no trees, shrubs, or even grass to restrain the rainfall, the streams that formerly were narrow and deep, and supplied an abundance of clear water the year round, have become broad and shallow, with slender currents of muddy water, which, when it rains, swell to roaring torrents that bring disaster and destruction everywhere.

Water courses have also changed; rivers become uncontrollable, and the water level of the country lowered perceptibly. In consequence, the unfortunate people see their crops wither and die for lack of water when it is most needed. In many parts of China, it is said, these factors, combined with uncertain moisture conditions, make 7 years out of every 10 more or less famine years.

Floods and Famine Are Common.

The Hwang Ho or Yellow River, which drains a large part of the famine district, once, records show, flowed through a rich, fertile valley, its tributary hills well wooded. To-day it is a broad moving quicksand, with a small amount of water most of the year, but when the floods come the whole face of the landscape may be changed. In 1886 this river, which is

(*Continued on page 8.*)

PROTECT AMERICAN CROPS.

Many of the most destructive insect pests and plant diseases now in the United States came from other countries. At the same time there are numerous others which have not yet gained entrance here, and it is the work of the Federal Horticultural Board of the United States Department of Agriculture to keep them out and thus protect American crops.

CATTLE OWNERS SEEK FUNDS TO ERADICATE TUBERCULOSIS

Secretary Wallace Asks Congress for Emergency Appropriation.

Money Needed to Pay Indemnities to Owners of Cattle Slaughtered—Lack of Funds Holds Up Killing Diseased Cattle and Testing New Herds.

In order that tuberculosis-eradication work may be continued, Secretary of Agriculture Wallace, at the urgent request of Members of Congress and others interested in the live-stock industry, has asked that an emergency fund amounting to $405,000 be included in the deficiency bill of the present Congress, to be used in the payment of indemnities for tuberculous cattle. It is estimated by the Bureau of Animal Industry that this amount will be necessary to carry on the slaughtering of tuberculous cattle until June 30, the end of the present fiscal year.

More Reactors Than Year Ago.

"For the present fiscal year," says the Secretary, in requesting the deficiency appropriation, "$800,000 was provided in the agricultural appropriation act for operating expenses in the eradication of tuberculosis, and $680,440 for the payment of indemnities for tuberculous cattle slaughtered. On account of the number of reacting animals found, the sum provided for indemnities is practically exhausted."

There remain sufficient funds to carry on the operating expenses for the remainder of the fiscal year, but, because the fund provided for indemnities is exhausted, it has been necessary to discontinue the testing of new herds. If the emergency fund asked by Secretary Wallace is passed in the deficiency bill, the eradication work can continue without serious interruption.

"For the first 8 months of the present fiscal year," the Secretary continues, "there were found by the tuberculin test 32,424 tuberculous cattle; whereas for the same months of the previous year

there were found only 18,273 reactors. This is not an indication that tuberculosis is on the increase because there were tested, from July 1, 1920 to February 28, 1921, 792,398 cattle with 4.1 per cent of reactors; whereas during the previous year for the same months there were tested 419,376 cattle with 4.3 per cent of reactors.

"Another fact that should be taken into consideration is that the market value of cattle has decreased to an extraordinary degree; in fact the salvage received from the sale of tuberculous cattle was approximately $12 per head less during these eight months than during the previous fiscal year, thus making it necessary that the department pay a larger percentage of indemnity than heretofore.

"It is estimated that for the balance of the fiscal year there would be condemned for tuberculosis 13,500 cattle, and at an average rate of indemnity of $30 per head the total claims for Federal indemnity would amount to $405,000. Therefore, this additional sum would be necessary to keep the work going along uninterruptedly to June 30."

Federal Government Pays One-Third.

Under the present practice the Federal Government pays not exceeding one-third of the difference between the appraised value of the reactor animal and the salvage obtained therefrom, the maximum amount payable from the Federal appropriation in any case for a grade cow being $25, and for a purebred $50. The remainder of the loss due to the slaughter of an animal for tuberculosis is borne by the State or county alone or by the State or county and the owner, depending upon the law in the State where the animal is slaughtered. That the various States are alive to the importance of the tuberculosis-eradication work is shown by the fact that the 36 States, in which legislatures have been in session since January 1, have appropriated nearly $4,000,000 for this purpose, and nearly $775,000 as emergency appropriations.

Dr. Seaman A. Knapp, who established the first farm demonstration work in the South, used to give these instructions to field agents: "Some farmers have peculiar views about agriculture. They farm by the moon. Never try to change this. Let them believe in farming by the moon or the stars if only they will try our methods. It doesn't pay to waste breath on such matters."

Can agricultural conditions be changed by simply talking? No. By demonstration? Yes.

SHIPPERS INTERESTED IN STANDARDIZING CONTAINERS

Will Eliminate Fraud and Reduce Marketing Costs of Fruits and Vegetables.

Multitude of Sizes and Lack of Uniformity Increases Cost of Shipments, Resulting in Lower Prices to Producers and Higher Prices to Consumers.

To eliminate fraud in the marketing of fruits and vegetables by the substitution of short-measure packages at full-measure prices is one of the principal objects of specialists of the United States Department of Agriculture now making a study of the hundreds of different types of containers in use. For example, baskets which contain seven-eighths of a bushel are frequently used as bushel baskets, it being difficult to detect the short measure. In Farmers' Bulletin 1196, from the Bureau of Markets, just published by the department, the specialists discuss the need for standard containers for fruits and vegetables and describe how the public is sometimes defrauded because of the many types and sizes of containers now in use.

Multitude of Sizes Increases Cost.

The serious lack of uniformity of containers increases the cost of marketing, say the specialists, because of the greater expense of manufacturing a large number of unnecessary styles and sizes and by breakage in transit, which is sometimes directly attributable to the difficulty of loading odd-sized containers. There are in common use at present about 40 sizes of cabbage crates, 20 styles of celery crates, 30 lettuce crates or boxes, 50 styles and sizes of hampers, 15 styles and sizes of round-stave baskets and marketing baskets varying in size from 1 to 24 quarts, whereas relatively few standard sizes would satisfy all demands of the trade. In many cases the 6-quart market basket, the 14-quart peach basket, the ⅞-bushel bean hamper, and the 5-peck lettuce hamper are confused with peck, half-bushel, bushel, and 1½-bushel baskets.

The Federal standard barrel law and the United States container act, which establish standard containers, have done away with a large number of unnecessary sizes of barrels, berry boxes, and grape baskets and have awakened a widespread demand for the application of the same principle to other containers, says the bulletin. At present there is no standard hamper, which is one of the most widely used types of containers, especially popular in the Eastern and Central States. Almost 30,000,000 of these baskets are used annually. The sizes of hampers which are recommended by the Bureau of Markets of the Department of Agriculture as being sufficient in number to satisfy all legitimate requirements of the trade are as follows: 8-quart, or 1 peck; 16-quart, or one-half bushel; 32-quart, or 1 bushel; 48-quart, or 1½ bushels. It is suggested that the latter be made in two styles to meet the preference in various parts of the country.

The round-stave basket, for which there is no standard, is popular in all regions except the Southern and Middle Atlantic States and on the Pacific Coast. About 20,000,000 such baskets are manufactured annually. The sizes which are recommended as standards by the Bureau of Markets are the same as those recommended for the hamper, except for the elimination of the 8-quart size. The splint, or veneer, baskets, for which there are also no standards, are well known to the public as market baskets. The sizes which are proposed by the Bureau of Markets are five in number—4, 8, 12, 16, and 24 quart.

SUNFLOWERS A GOOD SILAGE CROP IN SOME LOCALITIES

Sunflowers are likely to become good for silage material for farmers on irrigated land in the Northwest, according to reports received by the United States Department of Agriculture from Montana. The Mammoth Russian is in much favor, although experiments have been tried with some of the smaller varieties. The sunflowers were drilled in rows 20 inches apart and irrigated. They were put in about the middle of May, but from their frost-resistant qualities it is believed they could be put in at the same time as grain is sown. About 15 pounds of seed were used to the acre on irrigated land, but it was stated that if sunflowers are to be raised under dry-land conditions the seed should be put in rows 30 to 36 inches apart.

On the project under observation it was intended to let the sunflowers get fairly well matured, about the same as corn, before putting them in the silo, but as a storm broke them down it was necessary to put them in the silo earlier. The yield was from 30 to 40 tons per acre. Cows fed on sunflower silage kept up the usual flow of milk as well as those which were fed on the grain silage. Some of the big Holstein cows ate as much as 90 pounds per day. No unfavorable results could be noticed in the flavor of the milk. While this experiment has not gone far enough to reach definite conclusions, it indicates that sunflowers may be considered a good crop for silage in some localities.

Estimating the Chicago Live-Stock Market Important Factor in Making Prices

"What's the run for to-morrow?" is the question most frequently asked in the Chicago Live-Stock Exchange each morning as the hour of 11 approaches. It is answered by the estimate made by the Bureau of Markets, United States Department of Agriculture, and posted in the exchange at 11 o'clock of each market day. "Ten, twenty, fifteen," when repeated among the initiated means that the bureau has estimated that approximately 10,000 cattle, 20,000 hogs, and 15,000 sheep will come into the stockyards for the next day's trading. The estimate is always made in round numbers and always posted in the same order, cattle first, then hogs, and lastly sheep. It is one of the important factors in determining the prices paid for live stock, not only at Chicago but at other live-stock markets.

How Estimates Are Obtained.

It is prepared from figures furnished by all of the railroads entering Chicago and by applying the law of averages. The railroads report the number of carloads of each class and of mixed live stock en route, or for which cars have been ordered, that should reach the city in time for the next day's trade. From these reports and from the records of actual and estimated receipts by days of the week, which have been kept since December 15, 1918, when this service was begun by the Department of Agriculture, it is possible to determine with a high degree of accuracy by 11 a. m., the probable number of cars that will arrive for the following day and the average number of animals per car.

The reliability of this advance estimate is indicated by its general acceptance by the "trade" which uses it in the daily transactions in the market, following its release. It also serves as an indicator to the trade elsewhere and to country shippers as to market prospects for the following day. The most valuable influence of the estimate is its effect in assisting to stabilize the market. Knowledge obtained from accurate sources permits producers in a great many instances to load or hold back shipments as trade conditions warrant, thereby lessening the probability of supply gluts or shortages. It also assists killers at other points who buy on the Chicago market in planning where or when to place their orders for supplies, and is of value to local killers and the stockyard company in planning labor needs for the ensuing day.

HEAVY LOSSES SUSTAINED IN EXPORTING APPLES

As a step toward correcting faults in the present methods of handling export shipments of American apples and pears and other fruits, specialists of the United States Department of Agriculture are studying the prevailing transportation conditions. During the last few months one of these specialists accompanied a cargo of apples and pears from New York to London, and inspected other fruit cargoes upon their arrival in London and Southampton.

While foreign markets have generally proved attractive to American apple shippers, much dissatisfaction arises because of the uncertainty of transit conditions and the heavy losses suffered by the fruit. In two important cargoes during the past season this loss was more than 50 per cent, and in the total export movement of nearly 2,000,000 barrels it is estimated that at least 15 per cent of the fruit is a total loss or shows substantial deterioration with consequent loss in value.

Various factors contribute to the loss, and it is planned to inaugurate certain definite experiments at the beginning of the next season, giving attention to more careful culling of injured fruit at the packing house, better containers, prompt loading on the steamships, with special emphasis on proper loading equipment and careful handling, and proper refrigeration or ventilation en route. With careful handling at all stages the fruit should reach the European markets showing no greater damage than in the longer rail shipments in the domestic traffic.

MAPPING LIGHTNING ZONES FAVORED BY FOREST EXPERTS

The time-worn theory that "lightning never strikes twice in the same place," has been modified by forest experts of the United States Department of Agriculture to this extent: Lightning very often strikes in nearly the same places. It has its zones, in other words, where its appearance may usually be counted on with each electrical storm.

With the accumulation of data on causes and locations of fires in the national forests, these lightning zones could be mapped out and protective measures introduced—such as fire lines, regulated grazing and cleaning out of dead trees—which would more or less automatically control lightning fires at the start, the foresters believe. If these lightning zones were so mapped they would doubtless show a markedly close relation to certain types of topography, and sometimes more or less localized sections of many forests.

Next to campers and sparks from locomotives, lightning ranks third as the source of fires in the national forests. The records of the Forest Service of the department show that for the years 1914–1918, inclusive, lightning caused on the average 30 per cent of all fires reported. However, during 1920, a very unusual season, over 50 per cent of the 6.078 fires that occurred in the national forests were set by lightning.

CAMPAIGNS INCREASE THE USE OF MILK.

Following a milk-utilization campaign held in Spokane, Wash., in which specialists of the United States Department of Agriculture cooperated with State and local authorities, a survey was made which disclosed the fact that as a result of the campaign 6,000 people had increased their consumption of milk. During the campaign it was found that 2,800 school children in Spokane drank no milk, but that during the campaign 2,100 started to drink it daily. The specialists of the department have cooperated with the State extension forces in conducting milk utilization campaigns in a number of cities, all of which have resulted in an increase in the consumption of milk. Campaigns are never conducted in a town unless the supply of milk is known to be absolutely clean and there is a sufficient quantity to take care of increased consumption.

CONTROL ALFALFA WEEVIL BY SPRAYING.

The county agent leader in Utah reporting to the United States Department of Agriculture says the spray developed by the office of cereal and forage insect investigations, Bureau of Entomology, in the department has increased the production of the sprayed over the unsprayed alfalfa fields by an average of one-half ton to the acre. This spray is made of 2 to 2½ pounds of lead arsenate or calcium arsenate to 100 gallons of water. It is applied in a fine mist with a power sprayer at the rate of 80 to 100 gallons to the acre. The State leader says 351 farms were included in the demonstration, which covered 10,113 acres. It is estimated the saving effected by this form of alfalfa control amounted to $69.967.

Weekly News Letter

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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SOIL SURVEY FURNISHES MUCH VALUABLE INFORMATION

The Soil Survey of the United States Department of Agriculture is contributing its share to the development of American agriculture by placing in the hands of the people detailed knowledge of the soils of the country. This work is fundamental in character, its value is clearly recognized, and the demands for it are increasing far beyond the ability of the bureau to meet them with its present limited resources.

These demands come from many different interests. Prominent among them are the requests from development companies interested in opening large tracts of cut-over land to settlement. Exact information about the soils and the general character of crops that can be grown is wanted at once to assist the new settlers in making the right start. Such knowledge frequently saves years of experimental work. There is also an increasing demand for soil surveys from investigators working in almost every field of scientific agriculture. The requests for surveys from county farm advisers and extension-service directors have been especially numerous and insistent.

The peculiarities of our various soils must be taken into account if we are to make progress in plant breeding and selection, in fertilizer practice, in cultivation—in fact, in all work looking to the improvement of cultivated crops. Soil-survey work is thus the basis for the planning and experimentation of the various agricultural experiment stations, and farms and experimental plots for varietal and fertilizer tests are being established on all of the large and important soil types of the United States.

LICENSED WAREHOUSES FOR COTTON PROVE POPULAR

A big increase in the number of cotton warehouses licensed by the United States Department of Agriculture under the Federal warehouse act is reported by the Bureau of Markets for the past year. A little more than one year ago a temporary field station was established at Atlanta, Ga., under the administration of the United States warehouse act. At that time there were 8 cotton warehouses in Georgia, 2 in Alabama, 3 in Texas, and 1 in Mississippi licensed under the act. There are now 137 licensed in Georgia, 37 in Alabama, 3 in Mississippi, 1 in Louisiana, 9 in Arkansas, and 3 in Texas.

Licensing under the United States warehouse act is permissive and voluntary. During the first years after its enactment in 1916 warehouses were slow to recognize its benefits and farmers were slow to see the value of the standardized receipts made possible by the law, but during the past year many warehouses of different kinds have applied for licenses.

The Federal reserve banks of Atlanta and Dallas are taking an active part in influencing warehousemen to become licensed and bonded, and the Federal Farm Loan Board has approved forms of receipts to be issued to growers who use the warehouses. Very substantial reductions in the rates of fire insurance on licensed warehouses have been granted by various rating bureaus, in many instances amounting to 25 per cent from the scheduled rates.

NURSERYMEN WARNED AGAINST MISUSING STATE CERTIFICATION

Misuse of State certification in shipments of currant and gooseberry plants by nurserymen affected by Federal quarantine No. 26 against pine-blister rust may be prosecuted as a violation of the quarantine, it has been declared by the Federal Horticultural Board, United States Department of Agriculture.

Several nurserymen in the area covered by the quarantine, it is said, have made arrangements to have orders for currant and gooseberry plants from points outside the quarantined area filled by nurserymen west of the quarantine line. There is no objection to this practice, it is declared, but there is a very decided objection to a misuse of State certificates in connection with such shipments. A number of instances have come to the notice of the board in which the tag of the firm situated in the quarantined area, bearing the inspection certificate of the State in which the firm is located, has been attached to the shipment. Nurserymen who have engaged in this practice, says the board, are therefore warned of the risk involved, not only of being prosecuted as violators of the quarantine, but of having the stock seized and destroyed or refused entry into the State of destination. The certification of such goods should be made by the officials of the State from which the shipment is actually made.

MONEY FROM SIDE LINES INSURES AGAINST CROP FAILURE

Numerous little stories of big achievement are encountered in going through the reports to the United States Department of Agriculture from home demonstration agents in the South. In estimating the money value of the returns reported in the various activities of the clubs it is necessary, of course, to remember that account seldom is taken of the land value, interest on investment, board and lodging, and such things, although credit for labor at the current rate of pay is set down in most cases.

However, the value of the achievements rests upon something more important than money—the fine community effect, the leadership developed, the improvement in living standards, the general all-round rise in agricultural morale. It is impossible not to be deeply impressed by the work reports of some of these Southern women and girls, results accomplished, very often, under conditions of unusual difficulty and discouragement.

An example of what may be accomplished under the stimulus of the home demonstration work and with encouragement and cooperation in the home is afforded by the case of Mrs. Jim Dorris, of Bear, Ark., who enjoys the hearty cooperation of her husband in the work she is doing. With from three to six cows this couple sold, from January 1 to December, last year, $458.85 worth of milk and $495.75 of butter, and from 69 hens $249.80 worth of eggs. This $1,200 from side lines, coming in through the year, is important on any farm, and in many cases is a form of insurance against crop failures.

The planter—the farmer—needs to reduce the cost of transportation; the laborer to provide homes and cheaper living; the merchant wants the country air. What opposes? Roads—bad roads.—*Dr. Seaman A. Knapp.*

President Harding's Hobby Interests Extension Workers Who Have Similar Aim

Scarcely anything in the everyday run of human affairs is much more interesting than a hobby, particularly if it chance to have in it something of advantage to those whose lives, it may be, are filled with stern duties. The President of the United States has a hobby. "If I can do anything to change disappointment into new hope," said Mr. Harding, speaking one afternoon to the Washington correspondents, "I shall have satisfied the best hobby a man can have in this world."

Many Others Do Same Thing.

Men and women employed in the extension work of the United States Department of Agriculture, some for the children of the farms, some for the grown-ups, are doing just this kind of thing without, perhaps, realizing that it has become a hobby. Vera McCrea, president of the New York State Federation of Home Bureau Managers, cites a case to illustrate the point. Miss McCrea shows this letter from a farm woman:

> As you know, I should have left the farm and country life, perhaps, and gone with thousands of others to the city if I could have done so. I have looked forward to the time when I might go.
>
> But now the home bureau work among us has changed things. I am so absorbed in the work I am learning to do that I wouldn't leave the country for all the allurements of the city.
>
> You know we all have visions, but now mine are the same as yours.

Here is a paragraph from the annual report for 1920 sent in by the State home demonstration leader engaged in extension work with women in Massachusetts. It shows the spread of influence in a rather emphatic way.

Work conducted by the specialist:

77 training classes for local leaders.
2,166 women were reached by these groups.
1,685 women assisted by this specialist.
4,908 garments made.
6,314 patterns made.
4,541 home demonstrations established.
10 lecture-demonstrations led by specialist.
8 health demonstrations led by specialist.

Work conducted by home demonstration agents:

824 training classes for local leaders.
13,155 garments made, at a saving of $20,742.
20,066 patterns made, at a saving of $4,492.
18,005 women reached through local leaders.

Bulk of Income Spent for Food.

A report from the staff in Utah conducting extension work for women gives interesting figures from a rural food survey taken in 67 communities. This shows that 54 per cent of the farm income was spent for food. The farms produced 58 per cent of the food used, 66 per cent of the meat, 98 per cent of the eggs, 81 per cent of the dairy products, 42 per cent of the fruit, 74 per cent of the cereals, 59 per cent of the vegetables, 56 per cent of the fat, and 3 per cent of the miscellaneous commodities.

PROTECT RANGE ANIMALS FROM POISONOUS PLANTS

Estimates made in many localities indicate that the average loss of range animals as a result of feeding on poisonous plants is as great as 3 to 5 per cent, while in some range States the percentage is much higher. In Colorado it is estimated the losses amount to $1,000,000 annually, while sheep raisers in Wyoming have placed their annual loss as high as 14.6 per cent of their flocks. Specialists of the United States Department of Agriculture point out that these losses, to a large extent, are of mature animals ready or nearly ready for market, and for the rearing of which large sums have been spent.

It is especially important for stockmen in range States to become familiar with poisonous plants, particularly in the spring when the stock crave green food and when in some cases poisonous plants offer the only green forage that is available. Department Bulletin 575 of the United States Department of Agriculture, Washington, D. C., tells how to identify many of the plants that have caused thousands of animals to sicken and die. This bulletin contains numerous colored pictures of the plants and is obtained from the Superintendent of Documents, Government Printing Office, at 50 cents each. It also gives methods of treatment for animals poisoned through eating such plants. The bulletin aims to give help of such a nature that scientific knowledge will not be necessary in making use of the information contained.

BRING MODERN CONVENIENCES TO MANY FARM HOMES

Active interest in higher standards of living on the farms has been shown in a number of counties in California where home betterment projects have been conducted by county agents and home demonstration agents. The county agent leader reports to the United States Department of Agriculture that in the counties of Butte, Contra Costa, Fresno, Humboldt, Madera, Mendocino, Napa, Nevada, Orange, Placer, Santa Cruz, and Shasta a campaign was carried to successful conclusion for sewage disposal systems. A total of 159 septic tanks were installed for this purpose. In Napa county a majority of the farm homes now have sewage disposal systems due to campaigns of the county agent. Of 1,500 farms 1,300 have such tanks, although only 30 were installed in 1920. In this county 33 water supply systems were installed last year through this influence. In Humboldt County more than 100 lighting systems were installed.

Improvements in home grounds were reported from Madera, Napa, Orange, Placer, Stanislaus, Sutter, and Tulare Counties. Quite a number of new homes were built with plans provided by the county agents. Fifty-five farmers used the agents' plans for improved grounds, and 25 adopted labor saving devices.

BUILDS UP PROFITABLE HERD THROUGH COW TESTING

"As members of the Cedar Grove cow-testing association for the past 3½ years we have obtained some profitable results," writes the owner of a Wisconsin farm to a field agent of the Dairy Division of the United States Department of Agriculture. "When we started, our herd averaged 11,829 pounds of milk and 410.2 pounds of butter fat, while last year our average was 13,737 pounds of milk and 502.2 pounds of butter fat. We were encouraged by our tester to mix our rations before feeding and to milk some of our cows three times a day, which in one instance brought an increase in production of over 3,000 pounds of milk in the year.

"Another problem our tester helped us solve was our calf feeding. He encouraged us to mix a good calf ration, and our calves have grown as much as 2½ pounds a day. Cow testing also showed the difference in the profits of the different cows. Some of the cows made 2½ times as much as other individuals do.

"It was through the tester's suggestion that we started in with pure-bred cattle in earnest, and some day we are going to have a good pure-bred herd. Another thing the testing showed us is that we had sold a registered bull to be slaughtered which had five daughters that averaged over 13,300 pounds of milk and 525 pounds of butter fat. A lesson like this one will be remembered a long time.

"Putting it in few words, our association work helped us to feed, care for, and improve our cattle and study the results obtained."

Turkeys Found to Be Chief Factor in Spreading Gapeworms Among Chickens

Turkeys are probably the natural hosts of the gapeworm—a serious pest among young chickens—and are an important factor in their spread. This has been demonstrated by a zoologist of the United States Department of Agriculture as the result of experiments and other investigations carried on at Washington, D. C., and on farms in several localities in Maryland.

Many Turkeys Harbor Gapeworms.

During three winter seasons beginning in December, 1916, a total of 635 chickens and 679 turkeys were examined in the Washington city market. No gapeworms were found in the chickens, but 22.5 per cent of the turkeys were found to be infested. From 1 to 18 worms were found in each of the infested turkeys. A report of these investigations has been published by the department in Department Bulletin 939, "The Turkey as an Important Factor in the Spread of Gapeworms."

In view of the complete absence of gapeworms from a large series of adult chickens and their common occurrence in a similar series of adult turkeys, it would appear, the bulletin says, that adult chickens are poorly adapted as hosts of gapeworms. That turkeys above 3 years of age may harbor gapeworms is established by the fact that a turkey which was kept at the department's experiment station at Bethesda, Md., for three years after it was brought there was found after its death to be infested with a pair of worms.

In the perpetuation of gapeworms from year to year on infested poultry farms the two chief factors, according to the bulletin, appear to be turkeys and contaminated soil. Whether, in the absence of turkeys from a farm, gapeworm affliction among chickens will regularly disappear has not been definitely established, but it seems probable that it may often do so. Gapeworms among chickens appear to be more prevalent on farms where turkeys frequent the chicken runs than on farms where there are no turkeys. Available evidence indicates that gapes has a tendency to disappear on farms following the removal of turkeys.

From experiments recorded in the bulletin, it has been found that chickens, unlike turkeys, are readily susceptible to infection with gapeworms only while they are young. They become less susceptible as they grow older. Adult chickens are seldom likely to spread infection, for in those instances in which gapeworms develop in adult chickens the parasites are likely to live only a short time.

Methods of Avoiding Loss.

Losses from gapeworms can be greatly reduced, if not altogether avoided, according to the bulletin, by keeping young chickens on ground that has not been exposed to contamination within at least a year by chickens with gapes or by turkeys, and by excluding turkeys from it during its occupancy by chickens. As gapeworms appear rarely to occur in adult chickens, brood hens may be associated with young chickens with little risk of infection. The simplest means of preventing or reducing losses from gapes appears to be the exclusion of turkeys from farms where chickens are raised.

VIOLATIONS OF GRAIN STANDARDS ACT.

The Secretary of Agriculture issued on March 30, 1921, his findings of a violation of section 5 of the United States Grain Standards Act on the part of O. Vanier, Fairbury, Nebr. The findings show that Mr. Vanier purchased from the Jansen Milling Co., Jansen, Nebr., one carload of No. 4 or better White corn for shipment to Atchison, Kans., Atchison weights and official grades. Upon arrival at Atchison, the corn was inspected and graded by a licensed inspector, who found it to be No. 3 White, with a moisture content of 17 per cent. When the certificate was received by Mr. Vanier he altered the same to show a grade of No. 4 White, with a moisture content of 18 per cent, and transmitted the certificate so altered to the shipper, the Jansen Milling Co., thereby representing to that company that the corn had graded No. 4 White at Atchison, whereas in fact the license inspector had found it to be No. 3 White.

BRAHMAN CATTLE FOR THE GULF COAST.

A Brahman bull has been purchased for the Iberia Live Stock Experiment Farm which is conducted by the United States Department of Agriculture at Jeanerette, La. There is a general belief among some cattlemen in certain sections of the southern coastal region of the United States that the progeny of grade Brahman bulls of desirable type have certain outstanding merits that make the use of these bulls on native and grade cows preferable to the use of sires of better-known beef breeds.

Several points favoring Brahmans are claimed by the producers. Among the more important ones it is claimed that Brahman cattle withstand the insect pests and diseases prevalent in the low and damp areas and that they withstand the heat during the summer season better than the recognized beef breeds. It is also claimed that fewer bulls per hundred cows is necessary where Brahman bulls are used, and the basis for this statement is attributed to the vigor and vitality of Brahman bulls.

The work at present is to compare the merits of a purebred bull of a beef breed and a Brahman bull as sires for a herd of grade beef cows in this section. Results so far have not been conclusive.

Control Cotton Diseases by Selection and Crop Rotation

In certain sections of the South cotton diseases are so prevalent and severe that profitable crops can not be grown by the methods usually employed. There are, however, control measures which can be depended upon to greatly reduce losses from many of the diseases which cause greatest damage. These diseases, with methods of control, are described in Farmers' Bulletin 1187, "Cotton Diseases and Their Control," recently issued by the United States Department of Agriculture.

Wilt, or black root, according to the bulletin, causes the greatest losses to the cotton crop. The disease is widely distributed throughout the sandy soils of the cotton belt, from Virginia to Texas, and spreads each year to new localities. In severe cases the yields are reduced as much as 75 to 90 per cent. The planting of wilt-resistant varieties of cotton, combined with the use of proper rotations, is the only effective method now known of controlling the disease.

The presence of another disease, root-knot, in many sandy soils, makes the wilt more severe, and it is, therefore, essential that infested lands be planted for one or more years to crops which resist root-knot before wilt-resistant cotton is grown.

Root-knot is next in importance to wilt from the standpoint of money losses to the cotton crop. It can be controlled by using crop rotations in which root-knot-immune crops are planted on diseased fields for two or three years previous to planting cotton.

Cotton anthracnose is often more widespread than wilt, since it is known to occur in most of the cotton-growing sections. It annually causes losses which

range from slight to as high as 80 or 90 per cent of the crop. Bacterial blight attacks the cotton bolls, leaves, and stems. The best method of control is to plant only disease-free seed and to practice crop rotation. Shedding, the premature dropping of the squares or young bolls, can be lessened, according to the bulletin, by increasing the supply of humus in the soil and by late shallow cultivation to conserve soil moisture.

Measures recommended for the control of rust are the addition of humus to the soil, the use of potash-containing fertilizer, and drainage if the land is wet. No satisfactory method of controlling Texas root rot is available, but deep fall plowing and crop rotation are recommended as the best-known measures for reducing losses from this disease.

CAMPAIGN INCREASES USE OF MILK BY CITY CONSUMERS

The use of milk was increased, as a result of a campaign held in Winston-Salem, N. C., recently, to such an extent that on account of the enlarged volume of business dealers were able to distribute the milk at 10 cents a gallon less. The campaign was one of a series which is being conducted in various States by dairy specialists of the United States Department of Agriculture in cooperation with State and local officials.

Before the campaign was conducted a survey was held in Winston-Salem, and it was found that the per capita consumption of milk was less than one-half cup per day. Many school children were undernourished. The health authorities, who were actively assisting in the campaign, weighed and measured 1,866 white school children and found that 16 per cent were underweight, which indicated insufficient nourishment. Similar records were taken with 1,806 colored school children, and 15 per cent were found to be underweight.

During the week of the campaign an effort was made to determine the number of school children who received milk daily. Of the 5,647 grade children questioned, it was found that 2,198 received milk daily, and 2,123 drank no milk, while 2,427 were receiving tea and coffee.

AMERICAN RATS ARE FINICKY; VARIETY IN FOOD DEMANDED

A starved rat will eat anything from a strip of lead pipe to an old boot, but a well-fed rodent, such as we have in the United States, is often inclined to be finicky in the matter of food. Rat-poisoning campaigns often fail because the house owner does not give his intended victims a sufficient variety of edibles. Specialists of the Biological Survey of the United States Department of Agriculture urge a rat-control campaign in America, and they stress the importance of catering to the rodents' tastes.

Rat baits may be divided into three classes: Meat foods, vegetable foods, and cereals. In mixing his baits the successful poisoner selects a food from each of the three classes, and combines it with barium carbonate in the proportion of one part poison to four of food. Then he puts a teaspoonful of each variety on a strip of paper, or bit of board, so that the rat, traveling along his runway, finds a three-course meal all laid for him. Usually one of the three baits appeals to him, and the rat population is reduced by one.

Poisoned baits should be watched carefully, and uneaten baits replaced by others of the same class on the following evening. In this way a wide selection of foods may be used without departing from the basic combination. All baits must be kept fresh and tempting. You can't catch rats by smearing a dab of poison on a bit of stale bread and then putting it in some out-of-the-way corner.

Barium carbonate is the poisoning agent recommended by the specialists. It is tasteless, odorless, and can be obtained at any drug store. Full directions for its use, and a complete list of the food combinations suitable for a poisoning campaign can be obtained upon request to the United States Department of Agriculture, Washington, D. C.

Reducing Kansas Pasture Rentals Expected to Bring Cattle North

Readjustment in the cattle industry has hit Kansas pasture owners, and as a result such pastures are being leased at from $2 to $4 less per head per season of approximately 6 months than a year ago, according to information gathered by a representative of the United States Department of Agriculture. Leases in the Kansas district made so far this spring range from $6 to $12 per head per season. This compares with $8 to $16 in 1920 and $10 to $20 in 1919, the latter being the banner year for this enterprise.

Kansas pasture owners are optimistic, believing that the reduced pasture rentals, together with the ruling of April 1, effecting a 35 per cent reduction on freight rates on southern cattle shipped to northern grazing areas, will encourage the southern cattlemen to use their pastures so that the number of cattle grazed the coming season will compare favorably with last year. The number of southern cattle grazed in Kansas during 1920 was 25 per cent less than the previous year.

From present indications the shortage, if there is any, will apply more directly to cows than steers. It is reported that about 2,500 cows, exclusive of calves, will go into Greenwood, Butler, and Marion Counties, Kans., to be grazed on $7 pasture, the higher-priced areas being used for steers. It is also expected that movements of cattle into the Osage district in Oklahoma will be about normal volume. In this territory leases have been made at from $6 to $8 per head for the season.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended April 30, 1921:

Ginseng Culture. Farmers' Bulletin 1184.

Cotton Diseases and Their Control. Farmers' Bulletin 1187.

Standard Containers for Fruits and Vegetables. Farmers' Bulletin 1196.

The Grape Phylloxera in California. (Professional Paper.) Department Bulletin 903.

Report on Investigations of the Pink Bollworm of Cotton in Mexico. (Professional Paper.) Department Bulletin 918.

Studies in the Biology of the Mexican Cotton Boll Weevil on Short-Staple Upland, Long-Staple Upland, and Sea-Island Cottons. (Professional Paper.) Department Bulletin 926.

Commercial Utilization of Waste Seed from the Tomato Pulping Industry. Department Bulletin 927.

The Turkey an Important Factor in the Spread of Gapeworms. Department Bulletin 939.

The Sporogenes Test as an Index of the Contamination of Milk. (Professional Paper.) Department Bulletin 940.

Lawn Pennywort: A New Weed. Department Circular 165.

A Dangerous Tobacco Disease Appears in the United States. Department Circular 174.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1187; Department Bulletin No. 903; Department Circular 165.

Lawn Pennywort, A New Foreign Plant Becomes Pest When Planted in the Open

A few years ago lawn pennywort occurred as a greenhouse weed. It was set in the open for use as a border plant, where it became so aggressive and spread so rapidly that it is now regarded as a troublesome weed. Unless it is eradicated when it first appears in new localities it bids fair to become one of the worst lawn weeds in the East, say specialists of the United States Department of Agriculture. To familiarize people with this pest the department has recently published Department Circular 165, "Lawn Pennywort: A New Weed," which describes it and discusses methods of eradication.

The plant was introduced from southern Asia, and about 1890 florists found it useful as a border plant and for flat bedding purposes. The species is particularly undesirable on golf greens, where the seed is readily spread when they adhere to the shoes of the players.

The weed not only damages the turf, but is also obnoxious because it sometimes becomes infested with a fungus which causes the diseased areas to become slimy and disagreeable.

Lawn pennywort is a creeping perennial which grows in dense patches. The slender stems not only creep along the surface of the soil, but also grow a short distance below the soil surface. The mass of closely interwoven stems enables the plant to live over winter. The plant starts from seeds, which are numerous, and also from the underground stems. It is not widely distributed as yet, the specialists say, but its range seems to be increasing rapidly.

When the weed first appears the patches should be dug out with a spade and the plants burned or otherwise destroyed, says the circular. If the removed plants are simply cast aside they are likely to mature seed in a short time, and these seeds may cause a new infestation of the weed. Experiments to eradicate this weed by spraying with solutions of common salt, arsenic, iron sulphate, and gasoline, have proven unsuccessful. So closely does the plant trail to the ground that its leaves are not harmed when the grass is being cut with a lawn mower.

HERE'S A MINIATURE MILL; IT TESTS WHEAT VARIETIES

Uncle Sam has a perfectly equipped miniature flour mill and bakery in Washington which, despite its small size, draws its grist from all over the world. The mill and bakery is part of the equipment of the Bureau of Markets, United States Department of Agriculture. Its principal object is to supply information which is of use in the preparation and revision of Federal Grain Standards.

Hundreds of samples representing various grades, conditions, and varieties of wheat are sent in to the little mill and each of these samples is cleaned, scoured, tempered, ground, bolted, and baked in an electric oven. After baking, the specialists can study the weight, volume, color, and texture of the bread and record the results obtained from the sample of wheat that was used. There is no chance for error in making these comparisons as all the samples are treated exactly alike; the milling operations are carefully duplicated and the same recipe is used in mixing the bread and baking it.

The volume test is made by placing the baked loaf in a vessel of known cubical content. Flax seed, which finds its way into every crevice and does not cling to the loaf, is poured in around the loaf until the vessel is full. The quantity of flax seed used is then measured, and the difference in volume of the vessel and the volume of the flax seed needed to fill the crevices between the sides of the loaf and the wall of the receptacle represents the volume of the loaf. It is surprising to note the difference in volume of two loaves made from different varieties of wheat.

WHICH WILL LAST LONGER SPLIT OR ROUND FENCE POSTS?

Some people believe split fence posts last longer than do round ones. Probably as large a number hold the opposite view. The Forest Products Laboratory of the United States Department of Agriculture says that one will last about as long as the other if the percentage of heartwood and sapwood are the same in both. If the percentage of sapwood is increased by splitting, the split post will be less durable, while if the percentage of heartwood is increased it will be more durable than the round one. Exceptions to this should be made if the posts are of spruce, hemlock, or any of the true firs, whose heartwood and sapwood are about equally durable.

If the posts are to be treated with creosote or some other preservative, the round post is preferable to the split, because of the comparative ease with which the sapwood can be treated. Experiments at the laboratory demonstrate that the heartwood faces on split posts do not, as a rule, absorb the preservative as well as does the sapwood.

VENTILATED CRATES BEST FOR SHIPPING BERRIES

One of the most effective methods of causing fruits to decay in transit is to pack them in solid crates that afford little or no ventilation. A few years ago this was the manner in which early strawberries were shipped to market. The result was that large quantities of strawberries arrived at market in bad condition, and the monetary returns to the growers were smaller than they should have been.

But to-day, largely as a result of the activities of marketing specialists of the United States Department of Agriculture, the nonventilated Hallock crate, or "coffin box," as it is locally known in the Louisiana strawberry district, is now in universal disrepute as a strawberry container. True, a considerable number of nonventilated strawberry crates are still being used, in fact too many of them, but not nearly to the extent that they were used a few years ago. Berries shipped in ventilated crates invariably command a premium over berries shipped in nonventilated crates.

CHINA'S GREAT FAMINE IS RESULT OF DEFORESTATION

(*Continued from page 1.*)

known as "China's Sorrow," flooded some 20,000 square miles of the most densely populated lands, wiped out thousands of villages and towns, and drowned 2,000,000 people.

Some idea of the rapidity of the runoff in the mountains may also be obtained from the records of the Yanste River, which has been known to rise 58 feet above mean water level in one week and then fall 68 feet in less than three weeks.

Human folly and short-sightedness have thus made a country fertile enough to support over 50,000,000 people into a place where man must ever be haunted by fear of starvation and destruction. The lesson of deforestation in China is one which mankind should have learned many times from what has occurred in other places. In fact, it may, in a lesser degree, even be brought home to the people of America in future years unless, through wise forethought, care is exercised in the preservation of our forests from destruction by fire and wasteful lumbering.

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A NEW DISEASE APPEARS IN SOUTHERN TOBACCO BEDS

Mildew Found in Seed Beds of Shade Cuban Wrapper District.

Serious Outbreak Found in Northern Florida and Southern Georgia of Disease Resembling the Destructive Blue Mold of Australia—Other Growers Warned.

A new and alarming wilt disease of tobacco plants was discovered recently in the seed beds of the shade Cuban wrapper tobacco district of northern Florida, and has spread into Georgia. The disease is so serious that expert plant pathologists of the United States Department of Agriculture who were summoned by telegraph have advised extreme measures, even to the destruction of some seed beds and the abandonment of tobacco culture on some plats for the year; and have issued a warning to planters engaged in similar tobacco culture throughout the Southern States and in Wisconsin, Pennsylvania, and New England to guard against the introduction of the disease into their fields.

New to the United States.

The disease is a mildew different from anything previously observed in the United States, but in some respects similar to diseases reported from Malaysia and Australia. In the latter continent it is known as tobacco blue mold. It has also been reported from South Africa.

Infestations were first noticed on four widely separated seed beds in Gadsden County, Fla. Two of the seed beds had been sterilized with steam, and one was a burned-over swamp. The wilt appeared at one end of a bed and worked its way rapidly through. The infestation spread to 26 beds in Florida and into Decatur County, Ga. Practically all the cigar wrapper area of the Florida-Georgia district is now infected, and tobacco growers have been on the verge of panic because there are not enough healthy plants in sight to set the fields. This district is the oldest cigar wrapper area in the United States, and millions of dollars of capital are invested.

It is not known how the disease was introduced into Florida, as the seed all comes from reputable American growers. It is thought possible that it may have come on bale matting from the East Indies, some of which is known to have been used for tobacco baling before. There is also believed to be possibility that it came into Florida by way of California and Texas, as scientists are not certain it can not be identified with a disease which has occasionally been observed on a species of wild tobacco in those sections.

The Disease Spreads Rapidly.

The fungous spores are light and powdery and spread easily by the wind. They may be carried also from seed bed to seed bed by so simple a method as visitors collecting spores on their shoes or clothing and carrying it to healthy beds.

Due to greater moisture conditions in Florida than in Australia, where the disease has been observed previously, but is for the most part restricted to the seed bed, and to the greater susceptibility of plants in a region not previously infected with a disease, the department pathologists advise against planting shaded fields with seedlings from infected beds. They declare that where it is not possible to get plants from absolutely uninfected beds, it would be better to abandon the culture of tobacco for a year in these shaded fields. They warn against persons who have gone through infected fields being allowed in sound fields, and urge the exclusion of all visitors.

The department specialists have recommended the destruction of diseased beds and the spraying with Bordeaux mixture of beds not diseased. It is believed Bordeaux will give better results when applied late in the afternoon when there is a tendency of the tobacco seedling to stand erect, permitting a more ready application to the lower sides of the leaves.

An emergency circular on the subject has been issued by the department. A full account of the disease and any measures discovered for its control will be published later.

GROWING MORE FOOD AT HOME IS TRUE ECONOMY

Necessary to Save Shipping Costs on Water in Face of Lessened Returns.

Vegetables, Fruits, Poultry, Eggs and Dairy Products Should Be Produced on the Farm—Can Raise Them Cheaper Than Buy Them.

Increased transportation costs and lessened returns from the products they have to sell will compel thousands of American farmers to grow more of their own food, in the opinion of officials of the United States Department of Agriculture. These transportation costs will prevent shipments of the more moderate-priced fresh fruits and vegetables which are purchased by the growers of single crops or specialties for use in their own homes, and the lack of a market for special products in turn will be a blow to the buying capacity of the growers of those specialties.

Can Not Pay Freight on Water.

"The American farmer is not going to be able this year to pay freight on water," said a department official. "Water makes up a large part of fresh fruits and vegetables. The answer is that he must grow his own table food. He must also study the possibilities of substitution. This applies to vegetables, fruits, poultry, eggs, and dairy products which must be transferred from commercial channels to home consumption if they are to come within the reach of the average farmer's family.

"Specialized farming has created conditions of which comparatively few persons are aware. The grain farmer in many instances buys even his potatoes and green vegetables; the fruit farmer buys his dairy products; and even the man who raises milk for creamery, condensary, or cheese factory is likely to send his cream or milk away, feed the skim milk or whey to the calves, and not make his own butter. This year, just as far as possible for him to alter his system in a single season, the department

officials advise that he get back to the old plan which was aptly described as 'living at home.' This means not so much remaining on the farm as it does deriving every practicable product for consumption from the farm.

"The average American farmer knows how to raise other crops than those on which he specializes, but it has seemed good business, or at least expedient, to devote his energies to very few or even a single cash crop and buy his necessities, just as is done in other specialized industries. The grain farmer is perfectly capable of raising his own potatoes, his green garden stuff, and melons, tomatoes and other garden fruits, to take the place of orchard fruits which in many parts of the country have been killed by the late freezes. If the farmer has a piece of really good garden ground he can add materially to the variety and wholesomeness of the farm food supply with scarcely any expenditure except for seeds, and seeds, fortunately, are lower this spring than for several years.

Poultry Most Important Meat Supply.

"The same may be said of poultry. With increased freight rates this year the general farmer's principal meat supply will come out of his poultry yard, either in eggs or in table chickens and other fowls. Poultry is the quickest meat supply to produce, and the farmer will do well to build up a small flock as rapidly as possible. The increased freight rates on butter and eggs, together with the farm money shortage due to the disappointing returns from last year's crops, will make it advisable for many farmers' wives to return to the butter-making arts which they learned as girls from their mothers and which have been largely discontinued as farmers became specialists.

"Fruit is likely to be scarce in large and important farming regions, but its place can largely be taken by vegetable products. Two things are clear. In the first place, the average farmer, as it stands now, can not afford to pay freight on the water which makes up the larger part of both fresh and canned vegetables and fruits. In the second place, under existing conditions he can raise those things cheaper himself than he can buy them, and he can make many substitutes out of the garden and poultry yard if he sets out to do it. He has the material for the crops and he has not the money. It is not good business to run in debt except for essentials of production."

The Department of Agriculture will be glad to give information and advice to those who wish to diversify their home-grown food supply.

BOLL WEEVIL LIKES EQUALLY ALL VARIETIES OF COTTON

Adapt Themselves Rapidly to New Conditions and Carry on Their Destructive Work.

Entomologists Attach Importance to Study of Life History of Weevil Under Different Conditions—Longevity Similar on Upland and on Sea-Island Cotton.

Boll weevils develop about as rapidly and live as long on one kind of cotton as on another. They seem to adapt themselves to new conditions rapidly and become organized to carry on their work of destruction without delay. These points are brought out in detailed studies of the pest in the States east of the Mississippi River, covering a period of two years, conducted by entomologists of the United States Department of Agriculture at Madison, Fla.

A complete report of the studies has been published in Department Bulletin 926, Studies in the Biology of the Mexican Cotton Boll Weevil on Short Staple Upland, Long Staple Upland, and Sea-Island Cotton. Since methods of control are usually based upon facts secured from biological studies, the results of recording the life history of the weevil in this bulletin are of considerable importance to the cotton growers east of the Mississippi River.

Weevils Mature in Same Length of Time.

The studies were conducted both under outdoor insectary conditions and actual field conditions, the main object being to determine the difference, if any, in the biology of the weevil on the different kinds of cotton. The results all indicate that wide variation exists in the length of time required for the weevil's development under insectary conditions compared with normal field conditions.

On sea-island cotton plantlets the hibernated weevils lived 11.05 days. The first and second generation weevils fed on sea-island cotton squares lived 10.7 days, while the weevils fed on sea-island cotton bolls lived 15.3 days. It was found that there was practically no difference in the longevity of boll weevils on sea-island and upland cotton.

The largest number of eggs deposited by a single female weevil was 432. This record was made by a hibernated female on upland cotton squares under insectary conditions. The largest number of eggs deposited during any one day was 25. The field-bred weevils showed more vitally than those bred under artificial conditions.

Under field conditions the average length of time infested squares hung on the upland cotton plants after egg puncture was 11.5 days. The time required to complete the development of the immature weevil after the infested square dropped to the ground was 10.8 days in the upland cotton squares. There was practically no difference shown in the length of the developmental period of the weevils bred in short-staple upland, long-staple upland, and sea-island cotton squares.

The hibernation of the weevil at Madison, Fla., is incomplete, and the adults are seldom inactive more than 30 days at a time. They emerge from hibernation very gradually, the total daily emergence bearing a direct relation to the total daily rainfall. The weevils survive the winter in large numbers, but it was found that only 7.54 per cent of the hibernating weevils survived the winter of 1918–19.

SEED LOANS MADE TO 10,000 DROUGHT-STRICKEN FARMERS

Before the work of making seed grain loans will be completed approximately 10,000 farmers in the drought-stricken areas of the Northwest will have borrowed sufficient money from the Government to purchase seed for this year's crop, according to officials of the United States Department of Agriculture who are charged with making the loans. Without these loans it is said that these farmers would be unable to buy seed. It is apparent that more than three-fourths of the $2,000,000 appropriation made by Congress to assist farmers in the drought-stricken areas to purchase seed will be disbursed not later than the middle of May, when it is expected the work will be completed.

There was such a demand for loans, the maximum of which was $200, that it was necessary to limit them to farmers who harvested a yield of less than 5 bushels per acre last year. It was necessary also to refuse a large number of applications from farmers who harvested more than this yield but who were in financial distress because their entire proceeds from crops grown last year were used in paying off debts.

A report received by the department showing the progress of the work to April 23 is as follows:

State.	Number of loans.	Amount.
North Dakota	4,304	$663,259
Montana	4,785	679,451
Idaho	434	38,996
Washington	40	3,700
	9,563	1,385,403

GRAIN MARKETING METHODS SHOULD FIT LOCAL CONDITIONS

Department Specialists Compare Practices in the United States and Canada.

Line-House Operation of Farmers' Elevators Seems to Offer the Greatest Advantage in Those States Where Crops Are Somewhat Uncertain.

In cooperative grain marketing it is more essential that the system be suited to conditions and practical need than it is that the system itself has been successfully applied in other fields. This has been brought out in an investigation conducted by specialists of the Bureau of Markets, United States Department of Agriculture, a report of which has just been published in Department Bulletin 937, Cooperative Grain Marketing. One can not carry his investigations of cooperative grain marketing far, says the bulletin, without realizing that what may be an excellent method for one section and for a particular condition will not always work out successfully in other sections or when applied to other conditions. The bulletin makes a comparative study of methods in the United States and Canada.

The Canadian Plan Explained.

In the United States the most common type of farmers' grain elevators is owned and controlled by a body of stockholders in the immediate surrounding community, and the elevator is operated as a separate unit independently of any other similar elevator.

In Canada the line-house type of farmers' elevator prevails and is highly successful. The line-house type consists of a number of elevators controlled by one central office in a large marketing center. Two such companies in Canada own and operate over 600 country elevators in the three great wheat growing Provinces.

In comparing the two systems, the bulletin states that the line-house operation of farmers' elevators would seem to offer the greatest advantage in those States where crops are somewhat uncertain or where the crop year is of short duration, and under which conditions it may be necessary to close the elevators for certain periods each year. It is possible under the line-house method of operating elevators to economize in accounting and to standardize in construction and in the machinery used.

Favoring single-unit elevators is a degree of community pride which usually centers round these organizations quite independent of the services rendered. In many sections there is a prejudice against centralized authority which is not easily overcome. Elevators in the Middle West section of the United States were established primarily to solve marketing problems of local character. That they have not sooner attempted to extend their activities to the terminal markets does not, according to the bulletin, reflect upon their success. Rather, it indicates a conservativeness too often lacking in movements of this kind.

STUDY FRUIT SHIPMENTS VIA THE PANAMA CANAL

As a result of plans worked out in cooperation with the Bureau of Markets, United States Department of Agriculture, the Atlantic, Gulf & Pacific Steamship Co. is now contemplating arrangements to equip the steamship *Charles H. Cramp* and adapt it to use as a practical laboratory in which the shipping of citrus fruits and apples from the Pacific coast to eastern markets by way of the Panama Canal can be studied.

Every possible effort will be made, it is said, to equip the ship with up-to-date apparatus for the thorough study of the problems arising from this method of transportation. The cargo space will be divided into different compartments, in which various sets of conditions can be produced and controlled. It will also be possible to make records under variable transit conditions. Some factors that enter into the transportation of fruits and vegetables through the canal are temperature, ventilation, humidity, and other air conditions. Various degrees of ventilation and refrigeration will be studied.

Oranges, lemons, and apples will be the principal fruits to be transported in the *Charles H. Cramp*, which will operate between the Pacific and Atlantic coasts while the tests are being made. Several of the American steamship lines are interested in the economical fitting out of ships to engage in the transportation of perishable fruits and vegetables by way of the canal to Atlantic coast ports and to Europe.

METHODS RECOMMENDED FOR PREVENTING FOREST FIRES

Recognizing the value of normal grazing in fire protection of timberlands, a study of its application to national forests, say forest specialists of the United States Department of Agriculture, suggests:

The timely use of present ranges by the removal of rank vegetation before it becomes unpalatable.

The utilization of all suitable unused grazing lands by the development of water and trails and the elimination or control as rapidly as possible of all factors which prevent present use.

The closer consideration of the class of stock to be grazed where fire protection is involved.

The location of driveways and trails so as to form the most efficient fire lines and means of communication.

The overgrazing of strategic points; minor damage at such points may result in saving large areas of forest from destruction by fire.

The study of lightning fires on the forests with a view to determining whether lightning zones exist and the possibility of utilizing grazing live stock to assist in preventing the spread of fire.

The fuller enlistment of the moral and active support of some 25,000 additional persons in the forests on account of grazing uses.

The closer correlation of the live-stock industry of the forests with the fire-protection plans.

HOGS AND CATTLE ON FARMS INCREASE IN NUMBERS

Reports from special live-stock reporters to the Bureau of Crop Estimates, United States Department of Agriculture, indicate the following changes in supplies of hogs and cattle in the United States, during the first three months, in the past three years.

The number of hogs increased 1.6 per cent this year (from January 1 to April 1) as compared with a decrease of 0.2 per cent in like period last year, and an increase of 0.9 per cent two years ago. The births during the first quarter of 1921 were 1.9 per cent less than in like period last year and 12.6 per cent less than two years ago. The net movement from farms was 3.2 per cent less than last year and 23.8 per cent less than two years ago.

Cattle numbers increased 2.38 per cent during the first quarter of 1921, as compared with an increase of 0.25 per cent last year, and an increase of 4.23 per cent two years ago, during like period. Calves born this year were 4.8 per cent less than last year and 25.9 per cent less than two years ago. The net movement from farms was 21 per cent less than last year and 11.3 per cent less than two years ago.

What will hold the boys on the farms and multiply the wealth of the farmers? More power and less hand work.—*Dr. Seaman A. Knapp.*

Weekly News Letter

Published every Wednesday by the
UNITED STATES DEPARTMENT OF AGRICULTURE
DIVISION OF PUBLICATIONS
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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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COOPERATION.

"Farming in the future will no longer be a matter of brute force. It will be a business for brains, organization, intelligence." Reads as if it were taken from an editorial written yesterday, or a speech by some extension worker out in the field. The quotation represents the vision of one John Skinner, editor of the American Farmer, the first edition of which appeared in Baltimore in April, 1821, just 100 years ago.

The thing of chief interest now, perhaps, is found in the fact that the editor, influenced doubtless by the current discussions around him, began writing 100 years ago about the subject which has never ceased since his day to engage the attention of thoughtful people everywhere. Investigation shows that men have been trying all these years to achieve the perfect organization for agriculture, and they still are trying.

The minds of farmers to-day are turned, for the most part, toward cooperation as a means of reaching success. Just how far they may go with their efforts is a disputed matter. Many business men, many of the great consuming public, appear to question the farmers' right to protect themselves in this way, forgetting that every branch of business has done precisely this thing.

"There are about 15,000 farmers' organizations in this country to-day," said George Livingston, chief of the Bureau of Markets, United States Department of Agriculture. "These organizations have a membership of approximately 2,000,000. A movement so widespread should benefit both producers and consumers. Once the public believes cooperative marketing, for instance, will result in better quality, a standardization of products and packing, the reduction of waste, the public will wish to do its part to encourage such united effort. Everything should be done to discourage a seemingly growing belief that such organizations are for the purpose of controlling prices. The public should be brought to understand that farmers are organizing to get for themselves and their families a fair reward for the labor they have put into production, with the object of having higher standards of living, better homes, schools, and churches. Although he may not know it, every man in town or city has a close, personal interest in the success of American agriculture. It is, or should be, a cycle in results: better farming, better prices, better homes, better people, because the strength of the cities, as all thoughtful persons know, lies in the strength of the country, by which I mean the rural regions."

In his weekly conference with representatives of the press recently, Secretary Wallace, of the United States Department of Agriculture, said in speaking of the meeting of the Committee of Seventeen in Chicago: "There seems to be a fear that the farmers will go to price-fixing, but I think this fear is unfounded. The Chicago gathering should give reassurance as to the farmers' ability to bring about a monopoly. It should be remembered compulsory pooling of agricultural products was rejected, and that the final vote gave a majority for optional pooling. The conference gave hopes of much improvement in grain marketing methods."

REFUND TO WOOL GROWERS EXCESS PROFITS ON 1918 CLIP

A new record of distributing refunded excess profits on the 1918 wool clip was made by the Bureau of Markets, United States Department of Agriculture, during the week ending April 16, when 11,645 checks, representing $53,188.06, were mailed out to growers. The total number of refund checks which were mailed out to that date was 54,492, distributing excess profits amounting to $185,463.66.

The distribution of refunds was begun last October. Distribution for the week ending April 16 covered one-fifth of the total number of checks and one-fourth of the total amount of money returned to growers that far. The record made during that week, however, was due to an accumulation of checks received from the disbursing office and the special effort made to bring the work up to date.

Up to this time $568,116.54 has been received from wool dealers as excess profits to be distributed to the growers. The pending excess-profits cases involve an additional minimum amount of $581,600.27, which will make the total refund from wool dealers $1,149,716.18. This represents the excess profits thus far ascertained and demanded from 68 central dealers and 953 country dealers. Reports submitted by wool dealers indicate that only 38 per cent of the central dealers and 20 per cent of the country dealers made excess profits on their 1918 transactions.

BERMUDA ONION GROWERS ADOPT STANDARD GRADES

The 1921 commercial crop of Bermuda onions in the Coachella Valley, Calif., is to be marketed on the basis of United States Bermuda onion grades, according to an announcement of the Bureau of Markets, United States Department of Agriculture. This completes the standardization of practically the entire Bermuda onion industry in the United States.

United States grades for Bermuda onions were recommended by the Department of Agriculture in the spring of 1918. The same year the State of Texas legislated the compulsory grading of Bermuda onions according to the grades promulgated by the department and adopted by the Texas State Department of Agriculture.

When the onion shippers in the Coachella Valley requested inspection service from the California State Department of Agriculture in 1921, the department indicated that it would be impracticable to render such service unless suitable grades were agreed upon as a basis for inspection. Accordingly, the shippers made a comprehensive study of onion grades and decided finally to use the grades recommended by the Department of Agriculture. Perhaps the most important consideration leading to this decision was the fact that since the adoption of the department's grades in Texas there has been a considerable decrease in the number of rejected Texas onion shipments.

If by any process of training, it matters not how costly, we could implant in the American youth a love of industry, and a knowledge of agricultural and mechanical arts, they would blend with our native genius, skill and ability to do masterful things, and Americans would become the industrial arbiters of the world.—Dr. Seaman A. Knapp.

Size of Farm Generally Proves to be Determining Factor in Labor Income

That the size of the farm has much to do with the success of the owner is shown by results of a survey conducted by the United States Department of Agriculture in five counties in the south and southeastern Ozark region of Missouri. The operation of a general farm in the Ozarks with much less than 40 acres of land for crops is exceedingly unsatisfactory, regardless of the location of the farm, whether among the valleys or the hills.

Study Many Kinds of Farms.

The report of the survey published by the department as Department Bulletin 941, entitled "Farm Management in the Ozark Region of Missouri," is based on the study of the organization and management of 79 farms, 31 of which are representative of conditions of rolling and hilly uplands, and 48 of valley and level uplands. The topographical structure to a large extent determines the agricultural value of the land, says the report. As a rule the operator of a valley or level upland farm has a decided advantage over the operator of the rough farm. After deducting from their total receipts the year's operating expenses, including the value of family labor, and allowing 5 per cent interest on the capital invested, the survey shows that the operators of rolling and hilly farms had, in 1917, an average labor income of $309, and those operating valley or level upland farms an average of $646.

Of the 79 farms studied, 20 per cent had no labor income after allowing for the deductions referred to, and 21 per cent had a labor income above $1,000. Labor incomes earned by typical operators indicate that one having much less than 40 acres of crop land for a general live-stock farm has a rather poor chance of financial success.

Better Cows Would Increase Income.

Live-stock farming is the principal agricultural industry of the region. The use of cows for dairy purposes is increasing. The average annual production per cow of 78 cows on the better class of dairy farms in the area covered by the survey was 142 pounds of butter fat. This industry, says the report, would become more profitable if cows of greater productive capacity were introduced, and the production would be increased if the feeding of better-balanced rations was practiced more generally. Pasturage is the foundation of a live-stock industry, but natural pastures can be greatly improved by thinning out woodland areas, keeping the underbrush down, and sowing tame grasses.

For greater assurance of live-stock feeds during the summer droughts, to which the section is liable, many farmers plant sorghum, millet, and Kafir corn as auxiliary hay crops. On better-managed farms silage is also produced for winter feed and sometimes to supplement the pastures during summer droughts. With proper care, alfalfa, clover, soy beans, and cowpeas are grown, the possibility of these crops, both for hay and grazing, being clearly recognized.

The soils of the region have a wide variation in natural fertility and productiveness. They are usually porous, owing to the large content of stone and gravel. As a result, air and water circulate through them freely, and when they are put under cultivation the humus content is quickly lost unless a system of farming is adopted in which provision is made to replenish the supply. If the humus content is lost the water-holding capacity of the soils is greatly reduced, and, as a result, crops suffer severely during the summer droughts and profitable yields are then almost impossible.

MOUNTAIN SCENIC BEAUTIES SHOWN IN GOVERNMENT FILMS

When Nathaniel Hawthorne wrote his story about "The Great Stone Face" he little thought that the famous "Old Man of the Mountains" would figure as the "male lead" in a motion picture, but that is the case. "The Old Man of the Mountains" is the central figure in a new motion picture produced and issued by the United States Department of Agriculture.

The picture in which the "old man" stars is known by the title "Under the Great Stone Face." It is one of a series of four, in which the beauties of the White Mountain National Forest are picturized. The other three pictures are known as "Hitting the High Spots," "Cloud Busting," and "In King Snow's Court." All of them show phases of the work of the Forest Service in the White Mountains, but devote most attention to the recreational opportunities in the White Mountain National Forest, which is one of the most popular of the "Nation's playgrounds." "In King Snow's Court" was photographed in the winter and is centered around a winter carnival, in which figure ski jumpers, Alaskan dog teams, and skaters.

Each of the pictures is one reel in length. The films will be circulated through the distribution system of the department and cooperating State institutions. Copies of any of the pictures may be bought under certain conditions by authorized persons and institutions at the manufacturing cost of approximately $40 a reel.

NEW MOVIE FILM SHOWS WORK AMONG NEGROES

How the Negro farmer of the South is becoming a more prosperous and contented citizen through the influence of agricultural extension work is shown in a new motion picture produced and recently released by the U. S. Department of Agriculture. The picture was made in cooperation with the Alabama Polytechnic Institute and Tuskegee Institute.

The picture is in two reels, under the title "Helping Negroes to Become Better Farmers and Homemakers." The central character is Rube Collins, a typical Negro farmer. He is brought in touch with agricultural extension work through his discovery that the boll weevil is ravaging his cotton fields. Through the county agent he learns how to raise cotton despite the boll weevil and how to diversify his crops so that his farming will bring a good return. Later on the film shows the appointment of negro extension workers, both men and women, and their work among Negroes. Another feature of the film is a "movable school," which carries instruction for farming and home work direct to the farms. The picture ends with a family scene at the Collins home and a phonograph fading into the strains of "Suwannee River."

The picture will be circulated through the distribution system of the department and cooperating State institutions. Copies may be bought by authorized persons or institutions at the cost of manufacturing, which is about $80 for the two reels.

BUREAU OF ANIMAL INDUSTRY DIRECTORY.

The annual Directory of the Bureau of Animal Industry for 1921 is ready for distribution by the United States Department of Agriculture. The purpose of this directory is to show federally inspected meat establishments, biological establishments under Federal supervision, field offices of the bureau and related information. It is supplied free to employees of the bureau and to certain officials, and may be obtained by other persons for 25 cents upon application to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Relation Between Live-Stock Raising and Sugar-Beet Production Important

There is a close and important relation between the production of sugar beets and the raising of live stock, especially cattle and sheep, according to Farmers' Bulletin 567, recently revised and republished by the United States Department of Agriculture, on Sugar Beet Growing under Irrigation. Not only will the live stock, if properly handled, produce an important part of the farm income, but they are very essential to soil improvement.

Sheep and Cattle Thrive on Beet Tops.

The keeping of live stock enables the beet grower to make the best possible use of the beet tops, which, in connection with roughage, easily produced, keeps the live stock in good condition and enables the farmer to return the mineral element in the tops to the soil and increase the supply of humus which is of especial importance in irrigated sections. Sheep as well as cattle thrive on beet tops, but it is wise to feed them sparingly at first.

In some localities stock is pastured on the tops after the beet roots have been removed. This saves time and labor, but it is rather wasteful of the tops and frequently injures the ground. It is usually more satisfactory to gather and haul the tops to the feed yard and feed them from a rack, or they may be used as silage either in a silo or in a trench 4 or 5 feet deep and long and wide enough to hold the tops and the roughage necessary to make the silage. A layer of straw about 6 inches deep should be put in the bottom of the silo. The beet tops and straw or other roughage should then be added in alternate layers, and firmly packed to prevent spoiling.

The by-products of the beet field and sugar mill that are of especial importance to the farmer are the beet tops, pulp, molasses, and the waste lime. Many farmers sell the tops for cash, prices ranging from $2.50 to $5 per acre. This is usually not the best practice. The tops are of greater value as a stock feed and contain elements which should be kept on the farm. Beet pulp is likewise an excellent stock feed and may be used either fresh as it comes from the mill or dried. Beet molasses is the residue after the crystallizable sugar has been removed from the concentrated beet juice. It may be fed by itself or mixed with chopped roughage by spreading it over beet pulp, alfalfa, etc., or drying it with beet pulp. Waste lime is a by-product of the sugar mill, which, under certain conditions is of considerable value to the farmer in correcting the acid condition of the soil and in making the heavy soils more friable.

Sugar-Beet Area Extensive.

Sugar beets are grown in 17 States, in 10 of which the growers depend, in whole or in part, upon irrigation. The successful production of sugar beets under irrigation depends not only upon an adequate supply of irrigating water, but upon a suitable system of crop rotation, a thorough preparation of the seed bed, careful planting and thinning, timely and thorough cultivation, in addition to a supply of live stock which will balance with crop production. In addition to a suitable irrigating system the land should be provided with a satisfactory system of drainage; furthermore, the soil should be well supplied with humus.

MARKET QUOTATIONS INCREASE INCOME OF LOUISIANA FARMERS

A few years ago it was the practice to ship most of the strawberries from the Hammond, La., district to Chicago. That was before every shipper knew the daily distribution of shipments. To-day Louisiana strawberries are marketed in upward of 60 large cities from the Pacific to the Atlantic. Several carloads are also sent to Canada every season.

This increased distribution is attributed by the growers to the service rendered by the field station of the Bureau of Markets, United States Department of Agriculture, at Hammond, La. Here reports of general market conditions and prices at important strawberry-shipping and consuming centers and of car-lot movement everywhere in the United States are published daily. Weather conditions at shipping and marketing points are also reported upon, a service of great value in shipping highly perishable products.

Despite the fact that 75 to 90 per cent of the Louisiana strawberry growers are Italians or other foreigners, a considerable number of whom speak no English, they have been quick to appreciate that to "know the markets" is a prime requisite in marketing farm crops. By keeping in daily touch with national marketing conditions they know precisely when and where competition is to be met, the quantities of berries in the markets and rolling to market, and the markets offering highest prices. Not only has wider distribution resulted but the growers are realizing very satisfactory returns for their fruit.

ESTABLISH QUARANTINE ON FOXES IMPORTED FOR BREEDING

To protect owners of fox farms, the Secretary of Agriculture has ruled that all foxes offered for importation into the United States from any part of the world, except those imported for zoological gardens or similar institutions, shall be subject to inspection by an inspector of the Bureau of Animal Industry. The foxes must also be quarantined under the supervision of the inspector of the bureau until it can be determined by inspection or examination whether they are affected with contagious disease. If such disease is found, the animals must be returned to the country of origin or be destroyed. This regulation goes into effect June 1, 1921.

The new regulation states that permits must be procured for all foxes offered for importation into the United States as provided by Regulation 11 for the importation of cattle, sheep, goats, and swine, and all foxes imported for breeding purposes must be entered through ports designated for the entry of foxes as follows: Boston, Mass.; New York, N. Y.; Rouses Point, N. Y.; Calais, Me.; Pembina, N. Dak.; and Seattle, Wash.

They must be accompanied by an affidavit made by the owner or importer declaring clearly the purpose for which the foxes are imported, viz, whether for breeding purposes or for zoological gardens or other institutions. Feed, attendants, and quarantine will be at the expense of the owner, and each owner or his agent shall give satisfactory assurance to the inspector at the time of admission to quarantine that such provision will be made. The place of quarantine, its construction, arrangement, and equipment will be subject to the approval of the Bureau of Animal Industry.

The demand for fur and the attractive prices which it commands has interested many people who are favorably situated to breed fur-bearing animals. A number of fox farms have been established in the northern States. To encourage this work and to guide those who undertake it, the department has published Farmers' Bulletin 795, The Domesticated Silver Fox; and Yearbook Separate 693, Fur Farming as a Side Line; and Department Circular 135, Maintenance of the Fur Supply.

Failure of Swine to Reproduce Is Cause of Serious Loss to Breeders

Failure in the ability or desire of swine to reproduce may be caused by any of several conditions, say specialists of the United States Department of Agriculture. It may result from a disease or injury that seriously affects or destroys the secretory reproductive organs. It may be caused by improper functioning of the system, which in turn is often brought about by unsuitable feed or faulty elimination of waste products, or it may be due to a general lowering of body vitality.

Make Examination to Find Cause.

There are also cases of sterility or impotence for which definite causes are difficult to find. Failure to breed quite frequently occurs in boars and sows which have been fitted and kept in high condition for show purposes. In some instances the sow fails to come in heat, or perhaps indicates that she is in heat and is successfully served by the boar without resulting conception. In other cases the boar shows no desire to mate, or acts ineffectively.

The first step in overcoming the trouble is to find a positive cause, when possible, by making a thorough examination. This should include a search for physical defects, the presence of disease, the results of injuries, or lowered vitality from any cause.

When, from such examination, it appears that proper treatment will prove successful, remedies should be administered promptly. But if the cause is obscure, or if there is little likelihood of correcting the defect successfully, it is best to remove the animal from the breeding herd. Boars may be castrated and fitted for slaughter as market hogs. Similarly, sows should be discarded when they become uncertain breeders.

When there is no apparent cause for failure of swine to mate, experts of the United States Department of Agriculture frequently have observed a lazy or sluggish temperament. These hogs generally are of the type known as "hot-bloods." They are fat and show an unwillingness to exercise. The tendency is more common in mature hogs and increases with age, but is frequently found in young stock. Careless and unwise inbreeding practices tend to produce hogs of this type, but inbreeding does not necessarily bring about the condition.

When the lack of sexual vigor is seen in only an occasional animal it may be possible to recognize the fault in blood lines or type. But when failure to mate occurs frequently and when the type is right, the indications are that the system of management is fundamentally wrong.

Reduce Fat-Producing Feeds.

Upon the appearance of this condition an effort should be made to correct it by a restriction or modification of the diet and an abundance of exercise. The ration must have the fat-producing feeds largely reduced and protein feeds plentifully supplied. Pastures should be provided where possible, but when these are not available then the ration should consist of alfalfa meal, alfalfa, soybean, or clover hay to supply protein and vitamines, high-grade tankage, fish meal, linseed meal, or a good grade of white middlings and whole oats—with but small amounts of corn or ground barley, together with a good mineral mixture. In addition an abundance of daily exercise must be given. This will probably have to be forced by driving the boar or sow about the paddocks or pastures daily until the animal is tired.

By maintaining the digestive functions in a proper manner, by causing abundant exercise and by supplying proper nourishment, there will be brought about a proper elimination of the body wastes and a rebuilding of the tissues. This should cause the reproductive organs to function properly and bring about a toning up of the system in such manner that breeding operations will be successfully conducted. But in some cases of impotence of long standing even these measures fail.

Swine breeders must be alert to the necessity for ruggedness in herd boars in addition to other qualifications. Breeders must refrain also from too great a degree of fineness and smoothness in the selection of their breeding animals, or loss of breeding power will ultimately develop in their herds.

SINGLE SET OF STANDARDS FOR WORLD TRADE IN COTTON

A strong effort to secure the adoption of a single set of standards for the world trade in American cotton will be made at the World Cotton Conference which will be held in Liverpool and Manchester, England, June 13 to 22. Two representatives of the United States Department of Agriculture, Mr. Chester Morrill, Assistant Chief of the Bureau of Markets, and Mr. William R. Meadows, head of the Cotton Division of that bureau, will attend the sessions of the conference. Mr. Meadows will address the meeting on the subject of "Universal Standards for American Cotton."

It is thought by officials of the department that both the present time and the place of meeting are propitious for accomplishing the end in view, because the entire cotton industry, from grower to manufacturer, will be represented; all phases of cotton marketing will be discussed, and suggestions made for improvements in marketing. The dominance of the Liverpool Cotton Exchange in the cotton trade is looked upon as another important factor to be consulted in the establishment of world-wide standards for cotton. The exact method by which the standards will be determined upon, it is said, can not now be forecast, but any action taken, so far as the United States is concerned, will be subject to the approval of the Secretary of Agriculture.

Mr. Morrill and Mr. Meadows expect to leave this country about June 1, sailing from New York. This year's meeting will be the second one held by the World Cotton Conference, the first having taken place at New Orleans, La., in October, 1919.

CLOSE SPACING OF COTTON GAINING IN POPULARITY

Reports received by the United States Department of Agriculture and collected by southern farm journals indicate widespread adoption and profitable results from the close-spacing system of cotton planting, generally referred to as the single-stalk method. This method, which was developed by department specialists about 1913, rests upon the principle of suppressing the vegetative, late-fruiting branches of the cotton plants, giving more room and light to the fruiting branches which bear the early crop of cotton bolls.

In 1911 the department announced a discovery which has affected the cultivation of other crops and is of vital importance to the cotton-growing industry, when it showed that several cultivated plants, including cotton, have two distinct sets of branches. The branches that develop first from the lower joints of the main stalk of the cotton plant and attain greatest growth are purely vegetative and function as secondary stalks instead of bearing fruit. As a means of restricting these branches and giving the bearing branches better facility for growth, it was found that close spacing in the rows with plants "chopped" only a hoe width apart kept the lower branches from developing to the detriment of the upper. Very early chopping is not advised under the single-stalk system, preferably waiting until the plants are at

least 5 or 6 inches tall. Some of the farmers leave two or three plants in "hills" 12 or 15 inches apart. In addition to producing a larger yield, the new system favors earlier fruiting and enables growers to get their cotton matured in time to forestall boll-weevil damage. Some farmers report increased yields of from 25 to 125 per cent.

TUBERCULOSIS CAMPAIGNS COMPLETED IN SIX COUNTIES

Six counties have completed county-wide testing campaigns to eradicate tuberculosis, and several others are now doing similar work, according to veterinarians of the United States Department of Agriculture. The counties having tested the animals in every herd are: Barron County, Wis.; Clay County, Miss.; Hinds County, Miss.; Clatsop County, Oreg.; Island County, Wash.; and Gallatin County, Mont. Cattle in the District of Columbia have also been tuberculin tested annually for a number of years.

County-wide testing—called area work by the department veterinarians—is regarded by them as one of the most effective ways of controlling tuberculosis. Herds from which reactors are removed are retested from time to time to make certain that the disease is entirely eradicated.

PREVENT SPREAD OF GRAPE PEST.

A quarantine against the importation of grape vines and protective measures for their inspection and fumigation are recommended by specialists of the United States Department of Agriculture as means of preventing the spread of the grape phylloxera in California. An extensive study of the life history of the insect has been made by specialists of the department, a report of which was recently published in Department Bulletin 903, "The Grape Phylloxera in California."

The methods recommended by the specialists are in force in a number of sections in the California grape district. The grape phylloxera, according to the bulletin, is a native of the Mississippi Valley and made its appearance on the Pacific Coast among cultivated grapes planted about the missions as early as 1858. It has spread throughout the most of the grape districts in the State, and has caused such serious damage that many vineyards have had to be replanted two and three times. Though it is difficult to determine the loss caused by this pest, estimates place the destruction at about 75,000 acres of grapes during the last 60 years.

Study of Pink Bollworm in Mexico Shows Value of Killing Pest in Winter Quarters

Vigorous warfare against the pink bollworm in his winter quarters, as a measure for cutting down the havoc wrought by the pest during the next season, is among the control remedies found most effective by specialists of the United States Department of Agriculture, whose report, based on two years' experimental work in the Laguna, Mexico, has just been published. The menace of this destructive insect to the cotton fields of Texas lead the Federal Horticultural Board of the department, aided by specialists from the Bureau of Entomology, to seek control measures by experiments in the Laguna, where the insect has been present since 1911.

If 9 per cent or less of the larvæ are able to survive the natural mortality of winter and early spring in irrigated fields, it was found, this small percentage, with the larvæ surviving in the seed and other places, produces an infestation the following year that causes approximately 25 per cent gross loss to the Laguna crop. Every hibernating larva killed during the winter or early spring before egg-laying begins means the cutting off of many thousand larvæ by the end of the season, it is said.

Means of Control Recommended.

Early cleaning of fields by burning all the old stalks and bolls, cleaning and fumigation of gins, oil mills, and seed warehouses, and the fumigation of all seed kept on the plantations are recommended. As soon as possible the stalks should be cut and raked up in piles. Old bolls, sticks, and trash of all descriptions to which larvæ may be attached should be carefully picked up and burned with the stalks, the main object being to burn everything in the field that contains larvæ or would be likely to afford protection for them during the winter. No boll or piece of cotton is so small or negligible that it should not be picked up and burned, it is said.

Another means of control recommended as being of great importance is the early maturity of the crop. Infestation is started in the early spring as soon as squares are formed, by moths emerging from hibernating larvæ, and rapidly increases until practically every boll is infested by fall with several larvæ. The earlier the crop is matured, therefore, the fewer insects there will be to carry on the destructive work.

Thus far experiments looking toward the extermination of the pest by poison have not been very effective. Repeated trials were made in the laboratory by using a solution of calcium arsenate for the moths to drink. Their life, however, was found to be no shorter than that of the moths which had been given pure water. Powdered calcium arsenate applied to selected plats with hand dusters was then tried without success. The season, however, it is said, was unfavorable for this experiment, and the belief is expressed that under more favorable conditions it is possible that better results might be obtained.

Losses in 1920 Exceed 40 Per Cent of the Crop.

The damage occasioned by the pink bollworm to the Laguna crop in Mexico has been constantly increasing since the introduction of the insect in 1911. This damage has been carefully studied by agents of the department for the years 1918, 1919, and 1920. In 1918 the damage had reached approximately 20 per cent of the crop. It was somewhat more than this in 1919. In 1920 it was conservatively estimated, after careful field inspection and counts, at approximately 40 per cent of the crop. A later field examination made by a commission representing cotton interests, including prominent cotton growers, appointed by the Governor of Texas, reported a damage of at least 50 per cent of the crop. 1920 proved to be an exceptionally favorable year for the insect, but the amount of damage occasioned by this pest will probably vary with the climatic conditions as well as the regional control which is exercised by planters. It is evident from this record that it takes only a few years for the pink bollworm to become abundant enough in a new district to do tremendous damage to the crop.

Came from Egypt.

It is believed that the insect was brought to Mexico from Egypt in 1911. Two importations of Egyptian seed were made then, one consisting of 125 sacks which were planted near Monterey, in the State of Nuevo Leon, and the other consisted of 6 tons planted near San Pedro, State of Coahuila, in the Laguna district. At present the pink bollworm is generally and uniformly distributed in the Laguna.

Details of the work of the specialists in the Laguna are contained in their "Report on Investigations of the Pink Bollworm of Cotton in Mexico," published as Department Bulletin 918.

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SINGLE-STALK METHOD OF COTTON CULTURE GAINS FAVOR

Large Gain in Yield Through Close Spacing of the Plants.

Less Damage from Boll Weevils and Lower Cost for Producing the Crop Among Advantages Gained—Do Not Thin When Plants Are Small.

Twenty-five to one hundred per cent increase in yield is reported by cotton growers who have adopted the new close-spacing system of cotton culture, introduced 8 or 10 years ago by the United States Department of Agriculture. Reports coming directly to the department and to southern agricultural journals, which have interested themselves in encouraging the new system, show that farmers throughout the cotton regions of the country are rapidly turning to the plan. Increased yield, less labor and expense for the same crop, and a lessening of boll-weevil damage are among the benefits recited in hundreds of letters written by farmers in various parts of the South. Indications are that the system will be adopted far more widely the coming season.

Space Plants a Hoe Width Apart.

The close-spacing, more commonly known as the single-stalk method of cotton culture, consists primarily in spacing the cotton plants so close in the row—a hoe width apart—that the lower or vegetative branches do not develop, and the growth of the plant goes directly into the upper or fruiting branches, permitting them to begin the development of blossoms and bolls earlier and giving them more nourishment and more light.

The cultural ideal under the new system is a cotton plant with only the single, erect, central stalk bearing numerous well-developed fruiting branches, but none of the vegetative branches or secondary stalks. The suppression of the vegetative branches is easily accomplished by leaving the young plants close together in the rows. Thinning is deferred until the plants are some 6 to 8 inches high, or even later under conditions of rank growth. If the young plants stand less than 6 inches during these early stages of growth, more of them will not produce many vegetative branches, but will have only the upright central stalk and the horizontal fruiting branches.

The distance between the plants is regulated with reference to local conditions and the habit of growth of different varieties, the range being between 6 and 12 inches. The plants then have a narrow upright form and can be left closer together in the rows. Even with the plants only 3 or 4 inches apart in the rows there may be less injurious crowding than with large many-stalked plants 3 feet apart in the rows. The distance between the rows, usually 3½ feet, can also be varied with reference to local conditions, but crowding the rows together, so that the sun does not reach the ground, is undesirable especially under weevil conditions.

Small Plants May Outyield Large Ones.

In the way of production two distinct advantages are gained, the smaller single-stalked plants free from any large unproductive offshoots, proceed at once to the development of the branches which produce cotton bolls, and in many cases these small plants produce almost

(*Continued on page 8.*)

LET U. S. D. OF A. HELP SOLVE YOUR PROBLEMS

The United States Department of Agriculture has in available form information, the work of practical scientists, on almost every problem which confronts the farmer.

This information was gathered by your Department of Agriculture for your benefit.

Use it.

It is carried to hundreds of thousands of farmers and farmers' wives by county agents and home demonstration agents.

When you have a farm problem or a household problem, present it to your county agent or home demonstration agent if there is one in your county.

If there is no such agent, or if the information through that source does not exactly meet the case, write to the Department of Agriculture.

NORTHERN ORCHARDISTS SHOULD SPRAY VERY THOROUGHLY

Tree Fruits Largely Destroyed Through Broad Central Belt Across Country.

Great Opportunity for Northern Fruit Growers Who Can Market a Good Crop—Spraying Necessary to Produce Full Yield of High Quality.

Specialists in the United States Department of Agriculture call the attention of fruit growers in the northern United States, whose orchards have thus far escaped the disastrous freezes of this spring, to the promising opportunity afforded them for profit through more thorough and careful spraying than usual to insure the greatest possible production of high quality fruit.

The almost unprecedented succession of freezes which occurred March 28–29, April 10–11, and April 17–18, have nearly destroyed the apples, pears, peaches, plums and cherries throughout a considerable portion of the country east of the Rocky Mountains. This frosted area extends from the Virginia-Carolina line southward into the Allegheny Mountains, westward through middle Arkansas to the Rocky Mountains, and northward well up into New Jersey, Pennsylvania, and westward through middle Ohio to Nebraska. Examinations by department experts and reports from experienced fruit growers have shown that in this great area only a remnant of the crop of orchard fruits is left. North and east of this area, in the New England States, New York, and the Lake Region, there is still a fair prospect for a good set of orchard fruits except in certain rather restricted localities.

Spraying Necessary to Secure Best Results.

Under these conditions it is of unusual importance that every effort be made by growers to produce a crop of fine quality, and since it has been repeatedly demonstrated that only by thorough spraying can the full yield and the maximum quality be produced, thorough spraying this season is likely to be the

most important feature of orchard practice.

Peach growers in New England, New York, and westward who still have a crop on their trees, should use every effort to control the curculio, scab, and brown-rot by carrying out the spraying or dusting schedules of the Department of Agriculture, or of the State agricultural experiment stations, with arsenate of lead, lime, and sulphur, to protect their crop to the limit from these pests.

Apple and pear orchards that make good in setting their crops should be thoroughly sprayed with arsenate of lead and lime-sulphur solution for early treatment in combating codling moth, apple and pear scab, and the other insect pests and fungous diseases, and later, in July, with Bordeaux mixture and arsenate of lead. Only by thoroughly carrying out the methods which have been developing for years can fruits of high quality and finish, and orchard picks reasonably free from second-class fruit, be produced. Every barrel of apples which goes into the cull pile this year from lack of spraying is likely to mean a serious money loss to the grower and will deprive the consumer of a necessary fraction of his supply. Farmers' bulletins on apple and peach spraying by the Department of Agriculture can be obtained by a postal card request. The same materials, and essentially the same schedule, as for apples are used in spraying the pear for its common pests.

The shortage of canning fruits will make every cherry desired this year by the housewife for canning and other uses. Plums, which are sometimes a glut on the market in years of abundant local supply, will doubtless be in insufficient quantity to fill the great gap in summer and autumn fruits caused by the untimely frosts. Bulletins and circulars are also available for treating the pests of these stone fruits.

COMPARE HIGH AND LOW PRICES OF FARM PRODUCTS

The average price received by producers of the United States for hogs during April fell below $8 per 100 pounds for the first time since March, 1916, according to a report by the Bureau of Crop Estimates, United States Department of Agriculture. The average price for April reached the low mark of $7.86. The highest price reached at any time was during August, 1919, when the average was $19.30 per 100 pounds. Prices advanced more or less steadily from 1916 to 1919, then took a rather rapid drop during the latter part of 1919. During 1920 the average price for each month was between $13 and $14 until December, when it dropped to about $11.

The price which producers received for cotton seed reached the lowest mark in April since November, 1914, when it was $14.01 per ton. The average price for last April was $17.23 per ton, as compared to the peak price of $72.65 in November, 1919. The low price in 1914 was the result of the big crop produced that year, which amounted to 15,873,002 bales.

The price of wool in April was below 18 cents, which is the lowest since May, 1912. In March and April, 1918, the average price of wool was 60 cents a pound.

Acala Cotton Gives Large Yields— Fiber Generally of Superior Quality

Though yields of Acala cotton at the rate of 2.07 and 2.83 bales per acre were obtained last year on experimental plats at the Government date farm at Indio, Calif., specialists of the United States Department of Agriculture find it necessary to caution farmers against crediting newspaper reports which place the yield at four, five, and even six bales.

The variety was acclimatized only a few years ago. It was named for the place in southern Mexico where the original seed was secured. The yields generally are good and the fiber is of superior quality, being, under favorable conditions, $1\frac{1}{16}$ inches long in comparison with $1\frac{1}{16}$ for Triumph or Mebane, $1\frac{1}{8}$ for Lone Star, and $1\frac{1}{4}$ for Durango. This causes it to sell usually at a premium of several cents a pound more than ordinary cotton.

Popular Variety in Northern Texas.

The variety has become popular in Oklahoma and northern Texas, and as a result of the experiments last year a movement is afoot to produce large quantities of pure seed of this variety in the Coachella Valley of California, where conditions are favorable for the production of pure, high-class seed, not only for local use, but for shipment to other cotton regions that do not have good planting seed. The cooperation of the State Department of Agriculture of California is being sought by the Acala Cotton Growers' Association for inspecting the fields and certifying the quality of seed, with such assistance as can be given by the Bureau of Plant Industry, United States Department of Agriculture, in roguing and selection work.

Although the results secured at Indio must be considered exceptional and not to be expected in regular farm practice, the Acala cotton usually is prolific, and usually stands near the head of the list when compared with other well-known varieties, including Mebane, Lone Star, Trice, and Durango. Such comparisons, in adjoining rows or blocks, have not been limited to the eastern cotton belt, but have been repeated for several years in the irrigated valleys of Arizona and California, and in different localities, including the Yuma Experiment Farm at Bard, Calif., and the Plant Introduction Garden at Chico, Calif.

Unfavorable Conditions for Egyptian Cotton.

Though cotton has been grown in the Coachella Valley for several years, the early efforts were not very successful, and no very favorable results have been secured from repeated attempts with Egyptian cotton, which often fails to set many bolls until late in the season. Excessive abortion of buds and young bolls of the Egyptian cotton, and even of many of the lower fruiting branches, has been ascribed to high temperatures and dry winds, but in recent years the Durango variety of upland cotton, which is somewhat like the Acala, has yielded well.

The more compact habit of upland cotton may afford more protection against the dry winds. Also careful leveling and irrigation are now practiced in the valley in raising the Bermuda onions and other truck crops that often are followed by cotton. Several late plantings of Durango cotton, after the onion harvest in May, and in some cases as late as the middle of June, have yielded a bale per acre, with the precaution of restricting the size of the plants by the single-stalk method of deferred thinning and close spacing, 6 to 8 inches in the rows.

That the Acala plantings gave heavy yields in a season that was unusually hot may indicate a special tolerance of extreme conditions. In other districts the variety has appeared distinctly more resistant to drought as well as earlier than Durango. The bolls are larger and open better, with the cotton holding well together, so that picking is easy. The percentage of 5-locked bolls is somewhat higher as well as the lint percentage or "out-turn" at the gin. The prospect of a large outside demand for the seed is a further reason for specializing on the Acala cotton in the Coachella Valley.

Beet-Sugar Companies and Seedsmen Urged to Grow Seed Supply in U. S.

From present indications the acreage devoted to growing sugar-beet seed in the United States this season will be somewhat less than last year, in the opinion of specialists of the United States Department of Agriculture. This is due to several causes: First, the drop in the price of sugar has caused several of the sugar companies which grow beet seed to curtail their expenses, and one of their means of curtailment is by eliminating or greatly reducing the production of sugar-beet seed. Second, sugar-beet seed has become more abundant and more easily obtainable from European countries than it was during the war period and immediately thereafter. Third, while the price of imported sugar-beet seed is still from two to three times as high as the prewar price it is greatly reduced as compared with the price of this commodity during the war. Fourth, the cost of producing American sugar-beet seed under normal conditions is higher than the cost of seed imported from European countries.

Reasons for Encouraging the Industry.

In spite of these changes, which tend to reduce the beet-seed acreage in the United States, there are some strong reasons why beet-seed growing should be encouraged in this country, department specialists point out. The experience of American growers during the past few years, they say, has demonstrated that sugar-beet seed can be produced in this country comparable, in regard to quality, with the imported seed and in some respects, especially with reference to germinating qualities, the American-grown seed has generally surpassed the best imported seed.

The importations of sugar-beet seed during the past several months have indicated an even lower grade, from the standpoint of germination, than during previous years; in many instances scarcely 50 per cent of germinable seed-balls, some samples even lower.

Such seed is expensive at 25 cents per pound, as compared with American-grown seed testing 80 to 90 per cent germination, even if it cost that sum to produce. Furthermore, some of the samples of imported sugar-beet seed have been found to contain a considerable mixture of stock-beet seed, which renders the entire lot worthless for beet-sugar production.

The only argument, therefore, against the production of sugar-beet seed in this country is its cost when compared with that of an equal amount of imported seed. This difference in cost is more imaginary than real, because of the better germinating quality of the American-grown seed as well as its freedom from stock-beet seed. Furthermore, the cost of production will surely be reduced with longer experience and more highly developed labor-saving implements.

Reducing the Cost of Production.

Formerly the stecklings, or roots from which seed is produced, were all topped by hand in the fall before putting them in storage for the winter. We have now learned that this work can be done just as satisfactorily and at a small fraction of the former cost by the use of an ordinary mowing machine before the roots are taken out of the ground. Another large item of expense in beet-seed production is the hand harvesting of the seed stalks, which makes from two to four cuttings necessary.

One of the several objects which the Department of Agriculture has in mind in its beet-seed breeding work is the development of strains of seed beets which will ripen their seed at the same time. When this is accomplished it will be entirely possible to harvest the seed by machinery, and so with other operations employed in producing sugar-beet seed, the cost will certainly be reduced and the yield per acre will be increased with improved methods of culture, making the cost of production correspondingly lower.

A supply of high-grade sugar-beet seed is of prime importance in maintaining and expanding the American beet-sugar industry. War-time experience demonstrated that if the American beet-sugar industry is to be placed on a stable and independent basis a large part of the sugar-beet seed supply must be produced in this country.

FEWER CALIFORNIA LAMBS TO REACH EASTERN MARKETS

The movement of California spring lambs to middle western and eastern market centers this year will probably be lighter than in 1920, according to information gathered by representatives of the Bureau of Markets, United States Department of Agriculture.

Increased expense involved in such marketing, together with considerably lower prices than were obtained a year ago, form the basis of this forecast. Freight rates from California points to Omaha have increased more than 20 per cent during the past year. Expenses in transit, such as unloading and feed at the various stations where stock is stopped en route, are still high, in the opinion of shippers, and selling commission charges have advanced one-third as compared with those prevailing in the spring of 1920.

Last spring the freight rate on sheep from Mendota, Calif., to Missouri River markets amounted to $241 per car, while this spring the freight charges amount to $321.50. Commission charges at Omaha were $18.75 per car a year ago, compared with $25 now. In addition to these sharply increased expenses, the producer is confronted with a decline in price of approximately $8 per 100 pounds.

One gratifying feature from the standpoint of California shippers was a recent reduction in charges levied at feeding stations in the vicinity of Omaha. These charges now amount to 3 cents per head per day for the first 10 days and 2 cents per head thereafter, compared with former rates of 4 cents and 3 cents, respectively.

SPRAYING CONTROLS GRAPEVINE LOOPER.

The grapevine looper, a green worm about an inch and a half long, sometimes destructive to garden and arbor grapes and to Virginia creeper, has been found by United States Department of Agriculture observers doing some damage to vineyards in the Chautauqua belt along Lake Erie. The worm ordinarily feeds from early in June until the middle of July.

It may be killed by spraying. A solution of 1½ pounds of powdered arsenate of lead to 50 gallons of liquid has been found effective. The poison may be used in water or may be combined with Bordeaux mixture used to control fungous diseases. A spray application directed primarily against the grapevine rootworm and the grape-berry moth, immediately after the blossoms fall, incidentally controls the grapevine looper.

PENALTY FOR GAME LAW VIOLATORS.

For selling wild ducks in violation of the Federal Migratory Bird Treaty Act, Federal Judge Jacob Trieber, at Little Rock, Ark., imposed maximum penalties on John Hardy and Nick Gurno, at the May term of court. Hardy was fined $500, while Gurno was sentenced to six months in jail and assessed, in addition, a fine of $50. It was alleged that both of the accused have been leading figures in illegal traffic in wild ducks. Both had previously been arraigned in Federal court for violation of the game laws.

Weekly News Letter

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PRICES OF MEAT ANIMALS LOWEST IN 10 YEARS

Prices of meat animals (hogs, cattle, sheep, and fowls) to producers of the United States decreased 9 per cent from March 15 to April 15, according to a report issued by the Bureau of Crop Estimates, United States Department of Agriculture. In the last 10 years prices paid for meat animals have increased 4.5 per cent during the period from the middle of March to the middle of April. The report shows that on April 15 the index figure of prices for meat animals was about 37.9 per cent lower than a year ago; and 16.3 per cent lower than the average of the last 10 years on April 15. The statisticians of the department point out that the high prices paid for meat animals during the last few years is the result of increased demand during and immediately following the war, and that the present prices are approaching those which maintained during normal times preceding the war.

SEEK INFORMATION OF CHINA'S COTTON INDUSTRY

More trustworthy information as to cotton production and consumption in China is expected to be made available as a result of a recent conference between Mr. Chunjen C. Chen and officials of the Bureau of Markets and Crop Estimates, United States Department of Agriculture. Mr. Chen, since his graduation from Cornell University, has spent much of his time during the past two or three years in and about the Department of Agriculture and at southern experiment stations in an intensive study of cotton breeding, marketing, and allied subjects under the patronage of the Chinese Cotton Mill Owners Association.

On Mr. Chen's return to China in June he will undertake for the association to develop the cotton industry of that country on a scientific basis. Among his plans he now hopes to have the association undertake cotton statistical work along the same lines as that now carried on by the United States Department of Agriculture.

At present no trustworthy statistics of cotton are obtainable from China, so this project is expected to prove of great value to this country, especially since Mr. Chen also hopes to be able to produce American Upland long staples in China. It is now estimated that China produces annually about 3,000,000 bales of short staple cotton, practically all of which is consumed locally, such long staple as is consumed being imported in the form of combed yarns.

In growing long staple cotton, however, it is possible that China may become a competitor of the United States in the world market, provided enough were produced for export. Accurate cotton statistics would keep the trade in this country informed as to the amount of cotton being grown and the size of China's exports and imports which would enable American dealers to handle their product more intelligently.

STEVENSON GOES TO ROME AS AMERICAN DELEGATE

William H. Stevenson, vice director of the Experiment Station of the Iowa State Agricultural College, has been appointed permanent delegate of the United States to the International Institute of Agriculture at Rome, according to an announcement made by the United States Department of Agriculture. The appointment became effective May 1, and was made to fill the vacancy caused by the resignation of Dean Thomas F. Hunt, president of the State Agricultural College of California, who served as the United States member of the permanent committee of the institute while he was on sabbatical leave from the university.

As the permanent delegate of the United States, Prof. Stevenson will be a member of the permanent committee of the institute, which is made up of one delegate from each of 61 member countries. This committee constitutes a board of directors which meets periodically to plan and carry out the work of the institute. The board is charged especially with carrying out the program outlined by the general assembly of the institute, which meets every two years. The permanent delegate will look after the interests of the United States; such as improvements in reporting crop conditions, production, and prices of agricultural products in all countries, and in working out world tables showing surplus or deficiencies in crops. He is also one of the United States representatives at the biennial meetings of the general assembly.

RECORD SUGAR CROP MADE BY CANE AND BEET GROWERS

This country's greatest sugar crop was produced in 1920, according to final returns from producers of beet and cane sugar made to the Bureau of Crop Estimates, United States Department of Agriculture. The total is 1,266,148 tons and this exceeds the previous record crop of 1916 by 12 per cent and the low production of 1919, a year of exceptionally unfavorable weather, by 49 per cent.

Beet sugar has steadily advanced in production from the days when it was an experimental crop, with now and then a recession on account of weather. It first passed the mark of 1,000,000 tons in 1920, with 1,090,021 tons, or 86 per cent of the sum of beet and cane sugar for that year. On the contrary, cane sugar has declined in production for about 15 years. The product of 1920 was 176,127 tons, a low but not the lowest quantity of the period of decline. About 28 per cent of the 1920 cane acreage was devoted to producing cane for seed purposes.

Cane sugar production is confined almost entirely to Louisiana, but beet sugar production is widely distributed from Michigan and Ohio to California along a strip of country that has been called the sugar-beet belt.

COST OF PRODUCING WHEAT.

A detailed report of the survey showing the factors which enter into wheat production in various sections is contained in United States Department of Agriculture Bulletin 943, Cost of Producing Wheat, just published by the department. A preliminary announcement of the results of the survey was made some time ago.

Though the surveys are applicable to the crop year 1919, the material is given in the bulletin in hours of man and horse labor, amounts of material used and time required for the various operations, so that with this information at hand a grower can estimate production costs as soon as his wheat is harvested, by applying current rates for labor, seed, etc. Copies of the bulletin may be obtained free so long as the supply lasts, by applying to the United States Department of Agriculture, Washington, D. C.

Cost of Marketing Milk in Columbus, Ohio, Ranges from 11.3 to 15.3 Cents Per Quart

The total cost of milk delivered to the consumer's door in Columbus, Ohio, during the first six months of 1920, ranged from 11.3 cents up to 15.3 cents per quart, if the costs of one company which does business in "certified" milk are omitted, according to the figures recently announced by the United States Department of Agriculture. The cost of the raw milk delivered at the dairy ranged from 8.7 cents to 10 cents per quart. The total cost of operating the dairy plant, including the pasteurizing and bottling of the milk, ranged from 1 cent to 1.4 cents per quart, and the cost of delivering the milk from the dairy to the consumer ranged from 1.61 cents to 3.9 cents per quart.

The item of administrative expense varied widely, being as low as two-tenths of a cent per quart for one small company and as high as 1 cent per quart for a large concern.

Two of the seven companies covered were small concerns which produced their own milk supply. The cost of producing the milk for these companies in 1920 was 8.9 cents per quart, which is very similar to the price paid for milk by the larger concerns.

Figures Obtained on Loss of Bottles.

One of the items of cost which has attracted most attention among students of the milk business is the so-called "bottle loss." The department's study indicates that for the companies covered in Columbus this item ranges from one-tenth to two-tenths of a cent per quart.

Great difficulty was experienced in getting any satisfactory information concerning the shrinkage which takes place in the handling and delivery of milk, but according to the best data available this item amounted to between 2.3 per cent and 5.5 per cent of the total volume of milk.

Columbus is a city of 237,031 population, which is reported to consume about 27,000,000 quarts of milk per annum. This milk is supplied by over 2,000 producers, from 15 different counties, and is transported to Columbus from a territory having a radius of about 35 miles. Conditions appear to be fairly representative of many Middle Western cities.

The investigation covered seven companies, which sold about 16,500,000 quarts of milk and cream in 1920, or, approximately, 65 per cent of the total quantity consumed. The companies ranged in size from a very small one-wagon concern up to the largest, which operated 40 milk routes.

Handling Costs.

From the point of view of the farmer and the consumer, the important question is, What does it cost to handle the milk from the farm to the consumer? The cost of raw milk was between 63 per cent and 75 per cent of the total cost of the milk as it reaches the consumer.

During the period under study the retail price of Grade A milk in Columbus, as quoted by the dealers investigated, ranged from 14 cents to 14.5 cents per quart, though during 1920 the two small dealers sold their milk, which comes from tuberculin-tested cows, for 15 cents per quart. At the same time the wholesale price of milk ranged from 12 cents to 12½ cents.

If all the liquid milk products are combined and an average price computed, it is found that during 1919 the average price ranged from 12.5 cents to 15.8 cents, and during the first 6 months of 1920 from 12 cents to 15.3 cents. It is thus apparent that the 6 dealers did not make a large margin of profit and that the costs of some of them were higher than the price paid by the consumer. In fact, the department finds that one of the six companies was losing money throughout the period.

The average number of customers per route in 1920 ranged from 169 to 297 and the number of quarts per wagon ranged from 178 to 378, the average being 262. It is noteworthy that the most profitable company was the one having the largest average wagonload.

BIG FLORIDA ORANGE CROP BRINGS LOWER RETURNS

Florida will produce an excess of 1,000,000 more boxes of oranges this year than last, according to estimates just compiled by the Bureau of Crop Estimates, United States Department of Agriculture. During 1919–20, the final reports of transportation companies show that 7,000,000 boxes of oranges were produced in the State. Up to April 1 of this year, 7,100,000 boxes had been shipped, and the department statisticians say that this indicates a yield for the 1920–21 season of 8,300,000 boxes.

The grapefruit crop in Florida, however, will not be as large as it was last year, the report shows. During the season of 1919–20, the State produced 5,500,000 boxes of grapefruit as compared with the estimates for this year's crop of 5,000,000 boxes. The total citrus fruit crop of the State, including oranges and grapefruit, was 12,500,000 boxes last year as compared with the estimated production of 13,300,000 boxes this year. The total value of the orange and grapefruit crop this year is estimated at $19,450,000 as compared to $26,800,000 last year.

SHORTAGE OF FRUITS PREDICTED.

The State agents of the Bureau of Crop Estimates, United States Department of Agriculture, report that there will be a short fruit crop this year. The shortage will be fairly general east of the Rocky Mountains, except in portions of Michigan, New York, and New England. The reports refer particularly to stone fruits, such as cherries, plums, and peaches, but also indicate that there will be a material shortage of apples and grapes, though not as extensive as the shortage of stone fruits. It is too early, the statisticians say, to make an estimate of the probable yield of blackberries and raspberries. With the shortage of stone fruits it is expected that the fruit supply for domestic canning purposes will be limited in many sections. While considerable frost damage has occurred in some parts of California, the general outlook for deciduous fruits on the Pacific slope is still regarded as good.

WATCH TAME GOPHER DEMONSTRATE.

There's one animal that would be mighty unpopular if he ever left civilization and his free board and keep and went back to his fellows. That's the obliging little pocket gopher that travels with Leo K. Couch, of the Bureau of Biological Survey, United States Department of Agriculture, who is giving a series of demonstrations out West on how to trap and poison pocket gophers.

This little renegade, whether because he has no choice in the matter or because he likes the Government fare of carrots, potatoes, and parsnips, divulges the actual working methods of his kinsmen. When all is set for the demonstration, he is taken from his cage. He sets to work, unabashed by the spectators, and gives a first-hand exhibition of how a gopher makes a tunnel. Then he shows how the mound is made and the entrance to it stopped up. His keeper then digs him out, places him back in the cage, and proceeds to his explanation of how to set traps and where to place bait to destroy his mascot's unreformed brethren.

"BETTER SIRES—BETTER STOCK" CAMPAIGN GOES AHEAD

What the United States Department of Agriculture, in Cooperation with the State Agricultural Colleges and Allied Agencies, Is Doing to Encourage Nation-wide Improvement of Live Stock.

IMPROVEMENT IN QUALITY OF STOCK MARKS PROGRESS

A noticeable increase in the number of purebred animals listed in the "Better Sires—Better Stock" campaign is the principal development during the first three months of 1921. The result has been to raise the general average of purebreds for the whole campaign 1½ per cent. Altogether 431,139 head of domestic animals and fowls have been enrolled by their owners.

Of that number 22,605 are purebred sires and the remainder are females of various breeding, but all were bred to purebred males, according to the owners' pledges. Although the number of purebreds, as noted, increased noticeably, more scrubs also were listed than in any previous quarterly period, thus helping to accomplish one of the main objects of the campaign, which is to grade up inferior animals by the use of good purebred sires.

The greatest activity during the current year, so far as enrollments are concerned, has occurred in Ohio, with Nebraska second. In justice to other States it may be added that several, from which only a few pledges to use only purebred sires were received, have been active in other branches of the work, particularly in the procurement and distribution of purebred sires of good quality. Kentucky and numerous other States, including West Virginia, Minnesota, Wisconsin, and Virginia, are launching aggressive drives against inferior sires, particularly scrub bulls.

A feature of interest during the first quarterly period of 1921 was the dispatch of five emblems of recognition to far-off Guam, our island outpost in the Pacific thousands of miles beyond Hawaii.

STOCK BREEDERS INTERESTED IN STATISTICS ON PUREBREDS

On account of the great interest which the United States Department of Agriculture finds has been shown in census figures of purebred live stock in 10 representative farm States, the Bureau of the Census is proceeding with plans to complete the tabulation for the remaining States. This work is receiving the hearty cooperation of the United States Department of Agriculture. Livestock specialists of the department regard such figures as very valuable as factors in production problems, and as indicating developments in the improvement of domestic animals in this country.

It is understood that the final census figures pertaining to purebred live stock on farms will be available at the same time the general live-stock figures are furnished. It is thought that this will be some time during the coming summer. Breeders and breeders' associations interested in this work have already indicated their appreciation of the value of the figures thus far available. It is the first time in the history of any country that accurate figures on the total number of purebred animals on farms have been compiled.

FINE PICTURES OF LIVE STOCK.

In response to a general demand for illustrated material to be used in connection with the "Better Sires—Better Stock" Campaign, the United States Department of Agriculture, through the Bureau of Animal Industry, is preparing a series of live-stock pictures to be available for exhibit purposes and for distribution to agricultural high schools, farm bureaus, banks in rural districts, county agents, and breeders' associations. The pictures are halftone reproductions of photographs, and are approximately 11 by 14 inches, including the frame, which will be printed as a part of the picture, and thus make a neat finished job.

At present 10 pictures are planned for the series, which is known as the live-stock improvement series of the "Better Sires—Better Stock" Campaign. The first picture of the series shows a community picnic at which 15 Jersey cows are being judged. All the cows are from accredited herds, thus giving the subject double interest. Other pictures in the series will show beef cattle, horses, swine, sheep, and poultry. It is expected that several of the illustrations will be ready for distribution by July.

"I disposed of a bull calf because it was only a grade." With this explanation a farmer in Tangipahoa Parish, La., signified his desire to participate in the "Better Sires" crusade aimed at the improvement of live stock in the United States. This farmer reported five grade and two scrub cows which hereafter will be bred only to a purebred bull of good quality.

COLOMBIA WANTS TO IMPORT LIVE STOCK FROM AMERICA

Special aid and inducement for encouraging the importation of purebred live stock is being offered by several Latin-American governments, a move that officials of the Bureau of Markets, United States Department of Agriculture, believe should greatly increase interest among producers of purebred live stock in the United States in developing a South American outlet for their surplus animals. For example, the Colombian Government, under certain restrictions, will reimburse an importer for one-third of the value of the animals imported.

A copy of the following law covering this matter has been received by the department:

"1. Any person introducing into the country pure breeds of cattle, horses, sheep, pigs, or goats, for the exclusive purpose of improving the native stock, will be entitled to a reimbursement from the Government for one-third of the value of the animals, including all expenses of examination, transportation, feeding, insurance, consular invoices, etc., provided that with each shipment the owner presents to the Minister of Agriculture and Commerce the commercial and consular invoices with a veterinarian's certificate from the country of export stating that the animals are healthy and free from any contagious disease; also certificates of their pedigree, duly registered, and a certificate from the Colombian consul at the port of origin guaranteeing the authenticity of the documents. In the case of the importation of male cattle and horses, there must also be presented a photograph and a statement from the political authorities at the port of destination saying that the stock introduced is identical with the photograph and the description in the documents.

"2. The sum paid by the Government, in accordance with the previous article, shall not exceed for each head of cattle or horse the sum of $500; per ram or sheep, $80; per goat or pig, $40.

"3. The owner who, having taken advantage of this law, sells any of the animals imported before a period of four years from the date of arrival, will be liable to pay back to the treasury the sum received. Otherwise the selling will not have any legal effect.

"4. In the annual fairs promoted by the Government in the cattle-raising districts, prizes will be granted for the foreign stock as well as for the crossbreeds.

"5. The Minister of Agriculture and Commerce may spend up to $50,000 in the introduction of stock to be sold by public auction and the amount of the sales can be again invested in new stock."

MEXICO SHOWS INTEREST IN IMPORTING BETTER LIVE STOCK

A desire by Mexican officials to improve the quality of live stock is reported by the American consul in charge at Mexico City. According to information received by the United States Department of Agriculture, through the State Department, Mexico offers a market for a limited number of well-bred swine. There is also interest in cattle.

The Government agricultural school at San Jacinto (Mexico City) has a few pedigreed Duroc-Jerseys, as well as hogs of other breeds, imported about two years ago, for demonstrating the qualities and characteristics of the different breeds to farmers who might be interested and for breeding purposes. Early this year two carloads of purebred Duroc-Jersey hogs were imported by this agricultural school and it contemplates importing new stock of various breeds. The purpose is to introduce new blood and also to furnish farmers with young pigs of good quality. The two breeds of swine for which there is particular demand are the Duroc-Jersey and Poland-China. There is less demand for hogs of the bacon type.

The American consul indicates that the interest in improved live stock is due largely to a desire to replace animals lost during the late period of political disturbances. By introducing good breeding stock Mexican farmers expect to improve the quality as well as to increase the numbers. Live-stock breeders in the United States are advised that to obtain direct orders some advertising in Spanish is required. However, the Department of Agriculture is in a position to put American live-stock breeders in touch with officials and others in Mexico who are interested in importing live stock.

WELL-BRED YEARLING STEERS OUTWEIGH SCRUB 3-YEAR-OLDS

"My steers as yearlings go over the scales at from twelve hundred to twelve and a quarter. The ordinary scrub steers go out of here as 3-year-olds weighing from eight to nine hundred." With this comment in a letter to the United States Department of Agriculture, a stockman in Elko County, Nev., points out the benefits which he has derived from the use of purebred sires.

"In my opinion," he adds, "even in this country everyone should breed some purebred strain. Nevertheless the scrub bull dominates even in the face of facts and figures. The average ranchman does not take into consideration that it costs no more to produce a good animal than it does to produce a scrub, and the purebred is cheaper in the long run."

POMONA GRANGE INDORSES CAMPAIGN.

An indication of the interest which farmers' organizations are showing in the Better Sires—Better Stock Campaign, which is being promoted by the United States Department of Agriculture, is shown by a resolution passed recently by Indiana County Pomona Grange #58 of Pennsylvania. This grange, recognizing the value of purebred sires as a means of improving live stock, resolved to cooperate with the local county agent for support and publicity in behalf of the Better Sires—Better Stock Campaign, to have the secretary secure and distribute to subordinate granges literature and other information showing the value of purebred sires, and that the delegates attending the meeting bring the subject before their respective granges for general discussion. The secretary of Indiana County Pomona Grange is actively interested in the campaign, having been enrolled in it and granted emblem No. 863.

Virginia and Nebraska Lead All Other States in "Better Sires—Better Stock" Movement

An index of the relative activity of the different States in the "Better Sires—Better Stock" campaign is seen in the following list, which shows the States in order of precedence according to the number of animals listed from each. Any person in the United States or its possessions is eligible to participate in the campaign, the only requirement being that he or she owns one or more animals or poultry and agrees to use only purebreds of good quality as sires in his breeding operations for all classes of stock. Such sires may be either owned or hired.

Links Large Stockman and Beginner.

Every person who cooperates in the movement files with the application a list of the animals and poultry owned, and in return receives the department emblem. Thus there have been linked together all classes of stock owners, from the big ranchman with his thousands of animals, to the boy or girl club member with a single pig or fowl.

This Nation-wide movement to improve our livestock is carried on by State and county extension workers and assisting agencies in cooperation with the United States Department of Agriculture. It was inaugurated October 1, 1919, and has met with a gratifying response from all parts of the country. Emblems have even been sent to Porto Rico and Guam.

More than 1,000 animals have been listed from each of 22 States, in addition to poultry, the numbers of the latter generally exceeding those of the larger animals. The animals and poultry listed include good purebred sires and also female stock of any breeding but which is being bred exclusively to purebred sires of good quality. Two widely separated States, Virginia and Nebraska, stand out prominently at the head of the list, and Virginia leads by only a small margin, Montana is third.

Number of animals and poultry listed in "Better Sires—Better Stock" campaign from States having more than 1,000 animals enrolled.

State.	Animals.	Poultry.
Virginia	31,765	64,013
Nebraska	29,284	55,762
Montana	18,846	2,002
New Mexico	9,482	1,275
South Dakota	9,303	4,917
Ohio	8,826	11,635
Texas	7,138	4,599
Florida	7,111	6,179
South Carolina	5,444	4,323
Washington	5,381	41,156
Vermont	4,753	4,055
Massachusetts	4,603	10,014
Utah	4,023	2,114
Connecticut	3,475	10,290
Nevada	3,312	995
Colorado	2,647	3,280
Indiana	2,413	5,922
West Virginia	1,700	5,855
North Carolina	1,486	3,076
Kentucky	1,240	1,199
Minnesota	1,212	1,881
Idaho	1,059	461

Poultry Figures Are of Much Interest.

The number of poultry as compared to the larger animals varies widely, as might be expected. The most noteworthy case, however, is the unusually large variation in the totals for Washington, which has listed with the department 5,381 animals and 41,156 poultry. This is because there are in that State a number of very large poultry farms each containing more than 1,000 birds. Several of these are listed in the campaign.

Exhibit of Graphic Arts Familiarizes Public with Activities of Department

The many kinds of work done by the United States Department of Agriculture, possible to demonstrate with models, paintings, photographs, or drawings, was shown to the public the first two weeks of May in the Exposition of Graphic Arts in Washington. Attendants explained the displays, while lectures were given in the evening on various subjects describing the exhibits and the growing of several crops shown in the illustrations. The exposition was arranged and conducted throughout by employees of the department.

For city dwellers the exhibit of chief interest, probably, was what were called the "Before and After" pictures showing the possibilities for improvement in old houses, or in those which ordinarily are unattractive until beautified with trees, shrubs, and flowers planted with due regard to the landscape effects. These pictures were prepared by the division of Landscape Gardening of the Bureau of Plant Industry. From this bureau also were numerous excellent models in wax of fruits and vegetables, hand-colored in such close imitation of nature that many of the spectators were deceived until assured they were not the original products.

Photographs and paintings were exhibited showing the results of tests in connection with the enforcement of the Insecticide Act, and demonstrating the use of different preparations recommended to control plant diseases and insect pests. Other photographs illustrated methods and ideas in farm management; contributed by the Office of Farm Management; photographs of mushrooms, edible and poisonous, from the Office of Pathological Collections; birds and mammals, by the Biological Survey; transparencies, hand-colored bromides, sepia enlargements, colored sketches, pen and ink drawings, and lantern slides, from the Forest Service.

Plant diseases were illustrated by the Office of Forage Crop Disease Investigations; water-color paintings depicted the work of the Office of Cereal Investigations; many kinds of insects were shown in water color and pen and ink drawings by the Bureau of Entomology; seeds, grains, grasses, and indeed, almost every department of agricultural activity were to be seen in color or in black and white, all prepared by the various employees for use in bulletins and books issued by the department.

A number of striking posters and attractive covers of bulletins were shown by the Division of Publications. The Bureau of Public Roads presented models of concrete roads showing the various stages of construction, methods for preventing erosion, drainage and irrigation subjects, and architectural drawings. Virtually every division, office, or bureau of the big department had something demonstrating its service to the public, from growing a crop to marketing it for the consumer. Several thousand persons visited the exposition during the two weeks, notwithstanding inclement weather.

WILL EXPERIMENT IN SENDING MARKET NEWS BY RADIOPHONE

Agricultural market reports by radiophone is the latest innovation announced by the Bureau of Markets, United States Department of Agriculture. This service was launched recently at East Pittsburgh, and with the necessary radiophone apparatus, farmers and others within a few hundred miles of Pittsburgh will be able to learn agricultural market conditions and prices immediately after the close of the markets. The reports are sent from radio station KDKA over a wave length of 330 meters.

The department's experimental radiophone service follows shortly the inauguration of sending agricultural market reports by wireless. Sending the reports by radiophone would greatly simplify their receipt by farmers and others direct, inasmuch as the operation of a radiophone set does not require a knowledge of wireless codes. Instead of coming in dots and dashes the market news would be received in English, the same as conversation over an ordinary telephone.

VIOLATES GRAIN STANDARDS ACT.

Findings of the Secretary of Agriculture recently issued disclose a violation of section 5 of the United States Grain Standards Act on the part of Franke Grain Co., Milwaukee, Wis. This company had a contract with an eastern dealer for No. 2 White corn. A carload which had been inspected as No. 6 Mixed, was invoiced to the dealer as No. 4 corn. The Secretary found that the Franke Grain Co., had, by means of an invoice and correspondence, represented to the receiver that the corn was of a better grade than that shown by the official inspection certificate.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended May 14, 1921:

The Freezing Point of Potatoes as Determined by the Thermoelectric Method. (Professional Paper.) Department Bulletin No. 895.

Poisonous Properties of the Whorled Milkweeds Asclepias Pumila and A. Verticillata Var. Geyeri. (Professional Paper.) Department Bulletin No. 942.

Cost of Producing Wheat. Department Bulletin 943.

Organization and Results of Boys' and Girls' Club Work. Department Circular 152.

Annual White Sweet Clover and Strains of the Biennial Form. Department Circular 169.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1187; Department Bulletin No. 943; Department Circular 169.

SINGLE-STALK METHOD OF COTTON CULTURE GAINS FAVOR

(*Continued from page 1.*)

as many bolls and a better quality of lint than large many-stalked plants occupying the space of three of the smaller. The bolls also are produced much earlier on the small plants, and are more likely to escape injury by the boll weevil.

The Egyptian cotton industry of the southwest, an achievement of the Department of Agriculture, which has added $20,000,000 a year to the annual agricultural income of the country, could not have been accomplished, in the opinion of department specialists, without the new close-spacing system for controlling the vegetative branches. The benefits to the $2,000,000,000 cotton crop of the country at large, with continued extension of the new method, can only be faintly estimated.

Pima County (Arizona) farm bureau served 50 farmers in ordering 95,000 pounds of cotton seed cooperatively. The estimated saving was said, conservatively, to be about $2,000.

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CONDEMNS PLAN TO CREATE ALASKAN DEVELOPMENT BOARD

Creates a Governing Body Independent of Federal Authority, Says Secretary Wallace.

Wholly Different from Any Previous Form of State or Territorial Control—Activities of Governmental Departments and Agencies in Alaska Would Be Discontinued.

In response to a request from Representative Curry, chairman of the House Committee on the Territories, Henry C. Wallace, Secretary of Agriculture, sent the following letter commenting on the bill which proposes to create an Alaskan development board:

"MAY 14, 1921.

"HON. C. F. CURRY,
"*Chairman, Committee on the Territories,*
"*House of Representatives.*

"DEAR MR. CURRY: I have your letter inviting my consideration of H. R. 5694, a measure which provides for the creation of an Alaskan development board to take over the activities now carried on in Alaska by the Department of Agriculture, the Department of Commerce, the Federal Water Power Commission, and, to a large extent, the Department of the Interior.

New Form of Administration.

"Apparently the enactment of this measure would evict from Alaska these departments of the Federal Government and set up there a form of administration wholly different from anything we have ever had before in any State or Territory. As Alaska includes more than one-sixth of the total area of the United States, with vast natural resources, this unique proposal challenges attention.

"The proposed Alaskan development board would have control over the national forests, water powers, bird reservations, agricultural experiment stations, fisheries, game and fur-bearing animals, and the unreserved public lands of the Territory. It would have sweeping authority. While it is 'established in the Department of the Interior,' it seems to be quite independent of that department and its executive head except that the Secretary of the Interior would have some measure of control as to the organization work of the board and as to some of its decisions. This latter control, however, is slight.

"For example, if the proposed board should refuse to grant or renew any application, entry, patent, lease, permit, license, or other privilege, the applicant is given the right to appeal to the Secretary of the Interior within 60 days; but if, on the other hand, the board should grant the application, that would end the matter. To illustrate, if some one should apply to the board to purchase all of the timber in Alaska at 10 cents a thousand feet and if the board should reject this application, then the applicant would have the right to appeal to the Secretary of the Interior. But if, instead of rejecting the application, the board should grant it, then it would seem that no appeal could be considered, even though it might be made by all of the public-spirited citizens of the Territory. This is an extreme illustration, but it reveals the sweeping authority which it is proposed to grant to this board.

Independent of President and Congress.

"Even the President could not disturb the board except for neglect of duty or

(*Continued on page 14.*)

PAINTING OBLIVION.

"Paint me a picture of oblivion."

Thus spoke the chief editor to the chief artist.

And the artist, summoning all the aid he could find, began a picture—one that, if it realizes its full possibilities, should be one of the remarkable canvasses of the world.

Can you visualize oblivion? It isn't nothing. It is something that has become nothing. Looking at it in a little different light, it is the place to which something goes when it has become nothing. It is not chaos. It does not possess enough substance to become chaotic. It is—well, just oblivion. Specifically, it is the place to which the United States Department of Agriculture is consigning the scrub sire.

How will it look in colors?

NO MATERIAL CHANGES MADE IN GRADES FOR SPRING WHEAT

Delegations From Central Northwestern and Eastern States Heard on Proposed Revision.

Secretary Wallace Says Hasty or Ill-Considered Action Might Result in Grave Injury to Wheat Growers—Promises to Study Matter Further.

The Secretary of Agriculture issued the following statement May 16 on the proposed changes in the Federal grades for spring wheat:

"On April 27 and 28, 1921, delegations from Minnesota and other central Northwestern States met in my office and requested certain changes in the Federal grades for spring wheat. During this hearing an eastern delegation asked to be heard on grades for garlicky wheat, but were requested to defer their presentation until a later date, and were heard May 13, 1921, at which time delegations from Missouri, Pennsylvania, and Maryland also were heard on the same subject. General hearings have not been held, nor have interested parties in other sections of the country had full opportunity to present their views upon the changes proposed or the other changes in Federal wheat grades which might become necessary if the proposed changes should be granted. I have, however, received a great many telegrams and letters on the matter from other sections, most of them expressing strong opposition to any changes in the present wheat grades.

Many Letters and Statements Presented.

"I listened attentively to all that was said at the hearings, have read the letters and telegrams received, and have gone to some trouble to consult many people who favored and opposed the changes suggested, not only those who requested interviews, but others of wide experience and practical knowledge whose judgment I asked for. Also, I have read evidence presented at previous hearings and have at hand the information gathered with a great deal of care by the Department of

Agriculture through extensive investigations covering many years.

"From the information gained at the hearings and otherwise, and from the most conscientious study I have been able to give this matter during the past three weeks, I have not been able to find reasons which justify any change in the present grades, except a minor change noted hereafter. Among the reasons which compel this decision are the following:

"1. Frequent changes in grades and standards are highly undesirable and should be made only after thorough investigation has shown them to be both justified and needed.

"2. The grain standards act requires that notice of changes be given not less than 90 days in advance of their effective date. Changes made to apply to the crop of this year should become effective not later than August 15 for spring wheat and still earlier for garlicky wheat; and even then some wheat would have begun to move and many contracts therefore would have been made. Therefore, changes effective this year must be announced immediately.

"3. I have been in office but a short time—much too short to give this matter the study its great importance demands, particularly from the standpoint of the wheat grower. I am not willing to order changes which I do not of my own knowledge feel are fully justified and will be helpful to the producer and will promote more satisfactory marketing of our wheat crop.

Sound Facts Hard to Get.

"I have had no trouble in getting opinions and advice in this matter of wheat grades, but I have had a great deal of difficulty in getting sound facts upon which these opinions are based. The study I have given the matter makes it very plain to me that hasty or ill-considered action might result in great injustice to the wheat grower, who is least able to protect himself in such a matter, and throw our wheat-marketing system into confusion, to the injury of everybody who grows or handles wheat.

"While I make no changes in the grades at the present time, the criticism of the present grades warrants a thoroughgoing investigation, especially as to their practical application at country buying points. I shall make such investigation during the coming wheat-marketing season, and if changes are justified they will be made well in advance of the marketing season next year.

Drop Use of Term "Bright."

"During the hearing it was strongly urged that the words 'good color' be substituted for the word 'bright' in the spring-wheat grades. It was contended that the word 'bright' was used at times in a technical sense to the disadvantage of the wheat grower. This descriptive term 'bright' was used in the old Minnesota grades, and was carried over into the Federal grades when they were established. Very few cars of wheat have been graded down solely because of failure to meet the requirement 'bright,' but since it is charged that the term may be used improperly to grade down wheat at country buying points I am ordering that it be eliminated entirely from the standards. There seems to be no good reason for substituting some other descriptive term for it, as that would require explanation for a long time before being generally understood, and might also be used in the same way."

CHILLING TEMPERATURES STIMULATE PLANT GROWTH

Ripe blueberries were gathered in February, March, and April in the greenhouses of the United States Department of Agriculture as a result of experiments in the stimulation of plant growth by a period of chilling.

These plants were the large hybrids developed from wild blueberries through 10 years of selection and breeding. The largest berries reached a diameter of over ¾ inch.

At various times from midsummer to autumn the plants were placed in glass frames artificially chilled. After two to three months' chilling they were brought into a greenhouse and began growing and flowering at once, while similar plants that had not been through the chilling period continued dormant in the same greenhouse. Gardeners have applied the method in some degree to various plants, such as the lily-of-the-valley. It is only recently, however, that a department experimenter discovered that a period of chilling is a general requirement of northern plants.

CONTROL THE STABLE FLY.

The numbers of stable flies can be kept down by caring properly for stable refuse and by properly stacking or otherwise disposing of straw in a way that will not make it attractive as a breeding place for the flies. Flies cause much distress among animals and at times heavy losses. Control measures are described by the United States Department of Agriculture in Farmers' Bulletin 1097, The Stable Fly; How to Prevent Its Annoyance and Its Losses to Live Stock.

EGYPTIAN COTTON NOT SUITED TO TEXAS, DEPARTMENT FINDS

Durango, a Long Staple Upland Variety, Flourishes in Some Parts of State.

Experiments Covering Many Years Show Climatic Conditions Not Favorable—Numerous Plantings in 1920 Proved Disappointing—Ginning Costs Excessive.

The success of Pima Egyptian cotton in the Salt River Valley in Arizona has led to the exploitation of the same variety in Texas under representations that it would give corresponding results and excel varieties now grown there. A carload of seed was shipped into Texas for 1920 planting, resulting in much disappointment, and the United States Department of Agriculture finds it necessary to repeat a warning issued to Texas growers against the Egyptian variety in 1911.

Returns Are Disappointing.

The Egyptian cotton is not well adapted to Texas conditions, department specialists assert after careful experiments. It is more susceptible to diseases and more exposed to weevil injury. No reliance should be placed on the report that the Egyptian cotton is immune to the boll weevil. It may be claimed that the weevil's cult have given "little or no trouble with Pima cotton," but this is because there have been no weevils in the irrigated districts of Arizona and California, where the Pima cotton is grown.

Durango cotton, a long-staple Upland variety, flourishes in some parts of Texas, and gives returns, often as high as $25 an acre above the common short-staple cottons locally grown, but this is entirely different from Egyptian cotton. Even if it should be found practicable to grow the Pima variety of Egyptian cotton in certain favored localities of Texas, it would require a separate, exclusive culture to avoid deterioration by cross-pollination with other varieties.

Experiments Cover Many Years.

Numerous experiments have been made with Egyptian cotton in many localities in Texas, going back at least as far as 1867, resumed from 1892 to 1897, and continued during the last decades, in comparison with other varieties at Victoria, San Antonio, Falfurrias, Del Rio, Waco, Greenville, Clarksville, and many other places. Some of the early experiments were considered hopeful, and such cases continue to occur occasionally, but the results as a whole do not warrant

the conclusion that Egyptian cotton is a promising crop for Texas. There is no basis for encouraging commercial plantings, or expecting that a regular commercial industry can be maintained.

It is only with exceptional weather conditions and temporary absence or light infestation of weevils that even fair crops of Pima cotton are likely to be obtained in Texas. If the moisture supply is restricted, so that the plants are checked by drought, they become extremely susceptible to the black-arm disease. This disease is known also in the Salt River Valley and other cotton-growing districts of Arizona and California, but usually does little damage unless the plants have grown too rank and become crowded or are badly checked by lack of water between irrigations. Even in such cases the plants are not defoliated to any such extent as in Texas.

Many Difficulties in Growing Egyptian Cotton.

Other difficulties in introducing the new crop should not be ignored. Roller gins have to be provided for Egyptian cotton instead of saw gins, and the ginning cost is about three times as much as for Upland cotton. The picking cost per pound of seed cotton is usually twice that of Upland, while the cost per pound of lint is still higher on account of the lower "outturn," the lint percentage of Egyptian cotton being about 27 under favorable conditions.

The Egyptian bolls are mostly 3-locked and only half as large as those of an ordinary Texas big-boll cotton, so that twice as many bolls must be produced as well as picked to yield the same weight of seed cotton. Lack of the "storm-proof" character of the "big-boll" sorts is another disadvantage of the Egyptian cotton under Texas conditions.

If picking is not done soon after the bolls open, much of the cotton may fall out and be lost, especially in dry, windy weather. The larger size and later maturity of the plants add to the difficulties of picking, as well as increase the danger of weevil injury.

The indications of previous experience were confirmed by results of numerous plantings in 1920 in south Texas. Local interest was developed in the vicinity of Laredo to the point of bringing more than a carload of Pima seed from Arizona, which was scattered widely over two adjoining counties. The vigorous growth of the plants aroused great expectations, but an examination of many fields in August and September by an agent of the Department of Agriculture resulted in finding only one field that would bear comparison with good fields of Pima cotton in the Salt River Valley. In most of the fields the susceptibility to the black-arm disease was a striking feature.

Durango Cotton Is More Promising.

In contrast with the Egyptian experiments around Laredo are the results of an organized effort with Durango cotton in the lower Rio Grande Valley, around Harlingen. A carload of Durango seed was brought in and distributed among the farmers of the community, whose reports at the end of the season showed an average value of $27.56 per acre above the returns for short staples, or a net gain of about $66,000 from the whole product of the carload of Durango seed. Organized community effort to grow one variety of long-staple Upland cotton would give better prospects of success in Texas than further attempts to grow Egyptian cotton.

Newspapers Have Vital Interest in Fire Prevention to Save Pulp Wood

A burning cigarette butt beside a woods road in northern Maine may mean much to the business management of the Texas Daily Bugle. Sounds like a joke, but is it? The Daily Bugle, say specialists of the Forest Service, United States Department of Agriculture, represents the newspaper industry dependent on forests for its existence; the smoldering cigarette portrays forest fires caused by human carelessness. Newspaper is made from wood. Fires destroy the forests and lessen the supply of raw material with a resultant increase in the price of paper stock. Hence, the relation between the cigarette butt in Maine and the newspaper in Texas.

This is the day and age of newspapers. There are in this country 21,000 papers with a total daily circulation of over 28,000,000 copies. Sixty dailies have a circulation exceeding 100,000 copies each, and one Sunday paper claims 1,000,000 circulation. Newsprint is a 100 per cent product of the forest, but for persons stop to think that there is a real relation between their daily paper and the problem of forest protection.

Only 10 Years' Supply in Sight.

The paper industry of the United States uses about five and one-half million cords of wood a year. This is equivalent to from 40 to 80 years' growth of timber on approximately 500,000 acres of forest land. No concerted effort has been made to replace the amount taken from the forests, and the yearly drain has depleted the capital stock to something like 50,000,000 cords of spruce, the most desirable wood, in the regions of centralization of the pulp and paper industry. This indicates only a little more than 10 years' supply in sight, and it is predicted by the Forest Service that within this period the paper mills of the Northeast and Lake States will be hard put to secure pulp wood to keep their mills and machinery busy.

The pulp and paper industry is at present centered in the New England States, New York, and, to a lesser extent, in the Lake States. The bulk of raw material, exclusive of some 1,300,000 cords of pulp wood imported from Canada, comes from these States. During the past five years 25,000 forest fires in these regions burned over more than four and one-quarter million acres and occasioned a loss of $33,850,000. The damage done to pulp-wood stands by these conflagrations amounts to a staggering total.

Fires Influence Price of Paper.

During the past year the newspapers of the country have been hampered by the extremely high prices of paper. One of the underlying reasons for this increased cost is the diminished supply of pulp wood in our forests. Forest fires do not tell the whole story, but they represent one of the largest items that is responsible for the present condition.

A camp fire left smoldering, or a burning cigarette or match carelessly thrown aside, is a detriment not only to the success of your favorite daily paper, but to the pulp and paper industry, lumbermen, manufacturers, and the welfare of the Nation.

STUDY INDIAN AGRICULTURE.

Indian agriculture is being studied and assisted in Arizona by a number of county agents. The department of agronomy in the State agricultural college is conducting an Indian agricultural project. Indeed many principles of great value to inexperienced farmers are apparent, it is declared, in this agriculture. Many of the more common practices of the Indians are being lost, and since many of these are actual demonstrations of the best farming methods which should be applied to local farming conditions it is believed to be highly important that the extension service give attention to their revival. The Indians, it is said, are in position to provide the needed examples and information.

In Checking up Migration of Birds Banding Furnishes Valuable Evidence

The desire to learn what became of birds that flew south with the approach of cold weather led Audubon, the great American naturalist, to place silver threads about the legs of a brood of phœbes. The following spring he was rewarded by having two of the birds return to nest near the haunts where they learned to fly.

This occurred early in the nineteenth century, and was the first known case in America of bird banding. Since that time this means of securing information on the movements and life history of migratory birds has been used by many societies, and every fall thousands of birds fly south, each bearing a narrow ring, stamped with a number, about one of its legs.

Instructions for Bird Banding.

So valuable is this work, especially with game and insectivorous species of birds, that in 1920 the United States Department of Agriculture took over the experiments being conducted by the American Bird-Banding Association, the society's work having outgrown its available resources. Since it is the returns from bird banding that furnish the data desired in this branch of research, it is of primé importance that the methods employed be improved and that the percentage of birds under observation be increased. To assist cooperators in this work, the department has published Department Circular 170, Instructions for Bird Banding, which is now available for distribution.

It is the plan of the Biological Survey of the department, which is supervising the bird-banding work, to advance this method of research along two principal lines: First, the banding of fledglings as formerly practiced; and second, the systematic trapping and banding of adult birds. As the banding of fledglings has the advantage of affording valuable information on the ages of birds, the survey wishes to encourage these activities, but it desires to lay special emphasis on the added value of the systematic trapping of adults.

With the establishment of a well-connected chain of trapping stations throughout the United States and Canada, regular "returns" are confidently expected by department specialists with reports of retrapping birds that had been banded at the original and other stations. Data thus afforded are already indicating the exact lines of migration of individual birds, the speed of travel, and innumerable items of interest, many of which have a direct bearing upon the study of life histories and the administration of the migratory bird treaty act with which the department is charged.

Use Trap to Catch Birds.

The department issues bands of two types to cooperators in the work. One type is the split-ring band for all small birds, and the other is the flat strip band that is adjustable for all large birds. For general land-bird trapping the so-called Government "sparrow trap" has been found the most satisfactory. The bulletin contains details of construction of this trap. It also discusses other methods of trapping, the operation of traps, handling and releasing birds, and filling out reports. Federal trapping permits for this work are required under the migratory bird treaty act. Applications for permits and requests for the bulletin should be addressed to the Bureau of Biological Survey, Department of Agriculture, Washington, D. C.

LEG BANDS TO KEEP TAB ON WILD DUCK TRAVELS

When a wild duck decides to move from his summer home in Canadian wilds he neglects to leave a forwarding address to indicate where his winter quarters are to be established. The Bureau of Biological Survey, United States Department of Agriculture, is working on a method to offset the duck's carelessness. This consists of a system of trapping the birds and marking them with aluminum leg bands that carry a number and the legend "Biol. Surv., Wash., D. C." When a banded duck is killed, the hunter removes the band and returns it to the Biological Survey with information showing when and where the bird was recovered.

During the past autumn a Canadian collaborator of the Survey, Mr. H. S. Osler, operated a duck trap at Lake Scugog, Ontario, where he captured and banded over 200 black ducks and mallards, with a few ring-necked ducks and blue-winged teals. Some of these were killed near the place where they were banded, but others were from such localities as to indicate approximately the route taken by these birds in their journey to the Southland. In all, about 25 of Mr. Osler's ducks have been killed and the bands returned from points in Ohio, Indiana, Kentucky, Tennessee, Arkansas, Mississippi, Louisiana, and Texas. One of the blue-winged teals was killed near Port of Spain, Trinidad, British West Indies, more than 2,500 miles from Lake Scugog, where the band was attached.

The systematic banding of birds, as undertaken by the Biological Survey, will furnish conservationists with much valuable information.

Wild Fowl Need Suitable Resting and Wintering Areas

The alarming decrease in migratory wild fowl which preceded the treaty and the act of Congress for the protection of migratory birds has been changed to a marked increase, according to reports received during the last few months by the Bureau of Biological Survey, United States Department of Agriculture. The success of this great conservation measure has become apparent more quickly than was expected even by its friends. The measure is looked upon as the first important step in perpetuating wild fowl and wild-fowl hunting in the United States and Canada.

A second step of vital importance must now be taken, according to specialists, to provide feeding and resting places for the birds during migration and the winter months by retaining a sufficient number of small lakes, inland and coastal swamps, and marshes for their use. For a long period yet, there will undoubtedly be vast areas in Alaska and northern Canada which will furnish breeding places for innumerable wild fowl, but other resting places in the southern and intermediate districts to or through which the birds migrate must be provided. The perpetuation of such areas is at present a problem of great uncertainty.

Leading conservationists recommend that water and marsh areas proposed for drainage be carefully surveyed by men who are able to pass on the value of plant and animal products as well as the agricultural possibilities of the region. In many instances they say it will be found that such areas will return a better profit to the State and its citizens if left in the natural condition than if an attempt is made to reduce the territory to agricultural uses.

The Bureau of Biological Survey, which carries out the provisions of Federal laws for the conservation of wild life, points out that a lake, pond, or marsh is naturally possessed of many profitable features. Among its harvestable products are food and game fish, wild fowl for food, furs, and a natural ice supply. So important are these con-

siderations that a definite effort is now being made in the more progressive States to check unwarranted drainage of these water areas.

WILD BIRDS AND GAME FOWL SHOW NOTABLE INCREASE

Notable increases in migratory birds, through special protection afforded them under Federal laws, are reported by George A. Lawyer, Chief United States Game Warden of the Bureau of Biological Survey, United States Department of Agriculture, as a feature of his recent inspection of the various districts scattered throughout the country. Mr. Lawyer's trip took him practically around the borders and coasts of the entire country, giving him opportunity to observe the condition of the birds in all important wintering sections of the United States.

Wild ducks and geese were found in great abundance, showing the most notable increases of any of the migratory birds. Greater numbers of upland plover, sandhill cranes, and Wilson snipe or jacksnipe, were also especially noted. The welfare of the birds was found to be generally satisfactory and promising, although the draining of marsh lands in many places has driven them from some of their old feeding and breeding haunts.

Greater need is evidenced for the Government purchase and maintenance of large tracts of marsh lands, where the birds would be secure from molestation. Such natural asylums, it is said, are becoming fewer and consequently are affording less protection each year, due chiefly to the large areas being reclaimed for commercial purposes. The birds are quick to discover when they are in places where they are safe from hunters.

HONORABLE MENTION TO BE GIVEN FOREST-FIRE FIGHTERS

A plan to give official and honorable mention to stockmen or their employees who render independent service in preventing or fighting fires on national forests has been suggested by foresters of the United States Department of Agriculture. This plan should be similar to that now in effect in some sections where sheep herders who have been especially diligent in observing the grazing regulations are given a card commending them to other sheep raisers to whom they may apply for employment. The suggestion is made that special letters of appreciation could be sent by district foresters of the Forest Service.

Ordinary cooperation which stockmen agree to in their applications should not be thus recognized, the specialists say, but noteworthy cases should receive official and honorable mention. Examples of such cases taken from the Forest Service records are:

"Two herders saved the day in the case of one fire."

"Nine permittees fought fire 48 hours without recompense."

"A herder took up the patrol of a regular ranger during the latter's illness."

"One permittee came 30 miles and fought 100 hours and said he expected no pay for his services."

Cotton Conference Held in Washington Relative to Control of Pink Bollworm

The pink bollworm conference, called by the United States Department of Agriculture in Washington on May 16, for the purpose of considering measures to be taken to eradicate from the United States this newly introduced cotton pest, was attended by representatives from 14 States. A committee nominated by the State delegations formulated a report, which was unanimously approved by the conference.

Most Serious Menace.

The conference recognized that the pink bollworm presents the most serious menace that has ever confronted the cotton industry of this country, and believed, from the existing status of the pest, and from the evidence presented, that there is a reasonable opportunity, with adequate Federal and State cooperation, of eradicating it. The conference indorsed the policy of the Department of Agriculture looking to eradication.

The conference recommended that, in view of the fact that this pest is a menace to the entire cotton industry of the country, the burden of its control should be shared by the Federal Government with the States actually infested, and, further, that the States concerned and other States provide legislation which will give ample authority through the agency of noncotton and regulated zones for such regional control as necessary to effect extermination.

The delegates from Texas, representing the important farm interests of that State, promised full support in securing adequate legislation and cooperation on the part of Texas.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended May 21, 1921:

Varieties of Winter Wheat Adapted to the Eastern United States, Farmers' Bulletin 1168.

Flag Smut of Wheat and Its Control, Farmers' Bulletin 1213.

The Alcohol Test as a Means of Determining Quality of Milk for Condensaries, Department Bulletin 944.

Nitrogen and Other Losses During the Ensiling of Corn, Department Bulletin 953.

Unit Requirements for Producing Market Milk in Southeastern Louisiana, Department Bulletin 955.

Instructions for Bird Banding, Department Circular 170.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1168; Department Bulletin 944; Department Circular 169.

PUREBREDS REPLACE SCRUB COWS.

"Within the past 10 days we have sold to the butcher five scrub cows. We are now keeping only high grades and purebreds." With this explanation an official in the Louisiana State Normal School in Natchitoches Parish enrolled in the "Better Sires, Better Stock" movement conducted by the United States Department of Agriculture and the various States. All the livestock on the school farm, which includes cattle, swine, and poultry, are being bred only to purebred sires.

SELLS INFERIOR PUREBRED FOR BEEF.

"I sold an undersized purebred bull to a feeder in March," a Nebraska farmer writes to the United States Department of Agriculture in applying for enrollment in the "Better-Sires" campaign. The use of high-quality purebred sires and the disposal of inferior purebreds are the principal goals at which the Federal-State campaign for live-stock improvement is directed.

Market News Helps Growers Distribute Perishable Product to Best Advantage

Market gluts are one of the principal causes of loss in marketing farm products, especially those of a highly perishable nature, such as soft fruits and vegetables, which can not be held until conditions of supply and demand adjust themselves. Avoidance of these ruinous conditions is possible in large measure by more careful and widespread distribution, but all products are not marketed most advantageously by the same system, and the marketing plan varies somewhat in different areas from season to season.

Complete Picture of Market Situation.

With respect to fruits and vegetables, and more especially those of high perishability, perhaps no more effective work in broadening distribution has been accomplished than that of the Imperial Valley melon growers and shippers in cooperation with the Bureau of Markets, United States Department of Agriculture. The department opens a temporary office at Brawley, Calif., at the beginning of the shipping season. By means of a large chart in the temporary office of the department shippers are able to know the daily distribution of each day's shipments and diversions.

This information, in conjunction with the telegraphic report compiled by the department's representatives in the East and telegraphed to its Brawley office, showing receipts, prices, and conditions in from 20 to 25 of the major markets of the country, enables the shipper to have before him each day a complete picture of the market situation with respect to melons, and to distribute his shipments accordingly. There is no discrimination—every shipper has full knowledge of the entire situation. The day has passed when one shipper has advantage over another by reason of more complete information.

Widespread and accurate distribution can not be accomplished without dependable information as to conditions of supply and demand.

MILK CHECK LOOKS GOOD WHEN COTTON PRICES DROP

A farmer in Florence County, S. C., went to his county agent, in July, 1920, and asked him his advice as to selling his herd of cattle, consisting of several registered cows, which he had priced very low considering the value of the animals. The agent tried to persuade him to keep them, but he replied that he could not be bothered with cows when cotton was selling for such a price. Realizing that it was useless to argue, but that under boll-weevil conditions the cotton enthusiast would need the cows, the county agent simply put him off. The would-be seller called several times and urged the matter upon the agent. In the meantime cotton went down, and stayed down. In the fall the owner of the cows called again and said: "Mac, if it were not for my cows I don't know what I would do, since cotton has gone down. I'm giving my cows better attention, and selling $400 worth of milk every month. That milk check certainly looks good." The same farmer went to the county agent's office once more in January, this year. He said there was a cow he could buy for $250, and he wanted the agent's advice as to whether it would pay him to sell enough cotton to buy the cow. He believed that even if the long-staple cotton, which he could now sell at 20 cents, were to bring 40 cents next spring, the cow would give enough milk to make up the difference.

HOW TO COOK AN OLD HAM—VINEGAR, SUGAR, AND CLOVES

Many farmers and farmers' wives on farms where hogs are butchered have their own ideas about how hams should be cooked to best please the appetite. Here is the way specialists of the United States Department of Agriculture do it. These directions are contained in Farmers' Bulletin 1186, "Pork on the Farm—Killing, Curing, and Canning," just published by the department.

Soak several hours, remove all mold and loose pieces, and rinse well.

Cover with cold water, add two tablespoonfuls of vinegar, one-half cup brown sugar, four cloves, and one bay leaf, and heat to boiling. The amount of cloves and bay leaf may be increased if desired, especially for larger hams.

Reduce the heat to a constant simmer and allow to cook at this temperature at the rate of 20 minutes for each pound weight.

Remove from fire, but keep the ham in the liquor in which it was cooked until cold; then remove from the container and allow to drain.

Take off the skin, score the fat in inch blocks, and cover with a coating of brown sugar and crumbs. Stick with cloves 1 inch apart.

Bake in a slow oven until nicely browned, basting at intervals with one-half cup of water and one tablespoonful of vinegar.

COMBINATION BORDEAUX-OIL SPRAY CONTROLS TWO PESTS

Since the beginning of spraying for citrus-disease control in Florida growers have been handicapped in the use of Bordeaux mixture because of the marked increase of scale insects following treatment of citrus trees with this fungicide. This increase is attributed to the killing by the fungicide of certain beneficial fungi that parasitize the scale insects and hold them in check. In other words, the Bordeaux mixture incidentally cures the scale insects of their fungous diseases; hence Bordeaux spraying always had to be followed closely by special oil or soap sprays to control scale insects. This added greatly to expenses and deterred many from using Bordeaux mixture.

The advent of lime-sulphur sprays obviated this difficulty in part. They are somewhat weaker than Bordeaux mixture in general fungicidal value, but have, in addition, distinct insecticidal value against the scales in their young stages, and effectively control rust mites. But this somewhat lower fungicidal value gives less effective control of fungous diseases, such as citrus scab and melanose, especially under conditions very favorable for the development of these diseases. The problem still remained of getting a spray that would have the fungicidal effectiveness of Bordeaux mixture without the bad after-effect of scale increase.

The very simple solution of this problem worked out jointly by plant pathologists and entomologists of the United States Department of Agriculture is to combine the Bordeaux-mixture fungicide with the oil-emulsion scalecide. A method of making this mixture has been devised and has been tested out in grove practice by a number of representative growers for the first time during the last season and proved generally effective. The secret of doing this successfully is to have a good agitating outfit in the spray tank and to keep it churning while the oil emulsion is being poured into the Bordeaux mixture made in the usual way, as well as later while spraying. Such a combination of 3-3-50 Bordeaux mixture and oil emulsion carrying one-half per cent of oil is safe to use on citrus fruits; it retains apparently the full fun-

gicidal value of the Bordeaux mixture; it has sufficient scalecidal effect to eliminate the usual post-Bordeaux increase of scale, and it spreads nicely over the plant surfaces. This does not replace the fall or winter special spray with 1 per cent oil emulsion usually required in scale-infested citrus groves.

WISCONSIN DAIRYMAN SAYS COW TESTER WOKE HIM UP

"I just wish to write a few words to let the farmers in general know what I thought of cow-testing associations a year ago and what I think of them now," writes a Wisconsin dairyman to a field agent of the Dairy Division, United States Department of Agriculture. "About a year ago I was approached on the subject, and, after some talk, I said: 'Go ahead; if you can shoot in forty or fifty dollars I can, too.' So in April, 1920, we organized; and to top it they elected me secretary of the association. I did not think much more about it until the tester came to my place the first time, and when I saw him at work I commenced to wake up.

"I had two cows that had freshened about three weeks before that, and both of them had heifer calves which I intended to sell for veal; but after the test was made I saw that those two cows were making more butterfat for the month than any of my other cows. I decided to keep the calves, and further took interest enough to weigh the milk from each cow in my herd; and now those two cows are at the top of the list for the whole association.

"You may ask, what about those two calves? Well, if you have $300 you might get them; but not for less than that, even if they are grades. Does testing pay? Well, I will say yes; and if I can keep the association going next year, you bet I will."

CLUB MEMBERS DEMONSTRATE BETTER FARM PRACTICES

That boys and girls can demonstrate the best farm practices in their respective communities is shown conclusively by reports of the work done by Pennsylvania club members in 1920. Statistics of pig-club members may be taken as an example. It is estimated by men who know something about the swine industry in this State that the average daily gain of all hogs in the State—good, bad, and indifferent—is about ½ pound per day. How do you think the club records compare with that? Guess before you read on.

Club members in the pig-feeding club (producing pork) made their pigs gain 1.19 pounds, while those raising gilts to breed put 1.12 pounds per day on their pigs. That was a good demonstration that good pigs, properly fed and cared for, will do much better than common stock with ordinary care? It pays, too, for better results can be obtained on the same amount of feed.

Robert Webster, of the Huntersville Pig Feeding Club, Lycoming County, is the State pig-club champion as far as gain per day is concerned. Robert fed a purebred Poland China pig, which gained 2.43 pounds per day. That pig surely did make a hog out of himself, didn't he?

Florida Citrus Fruit Growers Want Reforestation to Aid Box Supply

Eaters of Florida oranges and grapefruit may not think of reforestation as in any way affecting their breakfast tables, but the Florida citrus fruit growers have a different point of view, according to forestry officials of the United States Department of Agriculture, who have found the leaders of the industry anxious about future supplies of box material.

The Florida grapefruit and orange crop now requires on the average more than 12,000,000 boxes yearly to get it to market. It has a money value of something like $30,000,000, and the industry is still expanding rapidly. By 1930, if production continues to increase in similar ratio to that in recent years, the output will require 40,000,000 boxes annually. Each box requires about 5½ board feet of lumber.

Local southern pine forests are the source of the raw material for these boxes, but the supply is drawn upon also for wooden containers for the products of Florida truck farms. Truck-farm products of the State now call for 13,000,000 boxes annually, and this demand also is growing.

Forest depletion under methods which do not provide for regrowth has reached a point which makes the question where containers are to come from a matter of very practical concern to the citrus industry in Florida. Conferences have been held with leading officials of the Forest Service to discuss this question. Application of the principles of forestry with a view to the production of sustained supplies of box material is regarded as the only way to meet the problem.

The Government has a national forest in Florida of over 300,000 acres, on which the practicability of forest management for a sustained yield has been fully demonstrated, according to the Forest Service, but the lumber needs of the State will require a very much larger acreage than this. Under the Nation-wide forestry program which the Forest Service and the forest and wood-using industries of the country generally are advocating, it is proposed to bring about conservative handling of private forest lands as well as public. The citrus fruit growers are reported to be joining in advocacy of this program.

STRENGTH STANDARDS ARE DESIRED FOR CONTAINERS

That authority for prescribing strength specifications for containers for fruits and vegetables should be vested in the United States Department of Agriculture is the text of a recommendation passed at the semiannual meeting of the National Basket and Fruit Package Manufacturers' Association at Cleveland, Ohio, April 13. The association also indorsed the package bill introduced in the last session of Congress which provided standards for round stave baskets, splint baskets, and hampers. This bill was never reached for final disposition and it is expected that it will be reintroduced into Congress at an early date.

At present the Department of Agriculture is charged with the administration of the standard container act. This law provides standards for berry boxes, grape baskets, and small till baskets used for fruits and vegetables, but does not include the establishment of strength specifications. There has been a widespread demand for investigation and recommendations regarding strength specifications for containers, and should Congress charge the department with prescribing strength specifications for the containers provided for in the bill it will be necessary to make extensive tests to develop data on which to base the regulations.

PUREBREDS MORE PROFITABLE.

Developments in the "Better Sires, Better Stock" crusade continue to show that there is a trend not only from scrubs to better stock but even from grades to purebreds. "I had three extra-good grade cows for family use," a dairyman in Iberia Parish, La., writes to the United States Department of Agriculture, but, he added, "I concluded to get registered animals, since such stock is better and more profitable." This dairyman is also a breeder of standard-bred White Wyandotte fowls.

Weekly News Letter

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CANADA ASKS FOR ADVICE ABOUT DUST EXPLOSIONS

Canada has recognized the work done by the United States Department of Agriculture in studying and checking dust explosions in grain elevators, mills, and other industrial plants. The department received and granted a request from J. Grove Smith, Dominion fire commissioner, to send representatives to address a conference of the Montreal Harbor Commission, called for May 19, to deal with dust hazards in elevators in eastern Canada. Experiences, such as the recent fatal explosions at Port Colborne, Ontario, and the Armour elevator in Chicago, have led the Dominion officials to seek precautions in the way of construction and supervision to prevent dangerous accumulations of dust that may produce explosions when mixed with proper proportions of air and ignited.

David J. Price, engineer in charge of grain dust explosion investigations, and H. R. Brown, assistant engineer, both of the Bureau of Chemistry, were assigned as representatives. The department has cooperated with Canadian officials in the past on conditions in elevators in Winnipeg, Fort William, Port Arthur, and other points in western Canada.

ILLEGAL TO WATER OATS TO INCREASE THEIR WEIGHT

From the interest displayed by the trade, much good is expected to result from the series of joint conferences recently concluded in a number of southern cities between officials of the Bureau of Markets and the Bureau of Chemistry of the United States Department of Agriculture and representatives of the grain trade, held for the purpose of making clear the requirements of the Food and Drugs Act and its relationship to the Grain Standards Act.

A misunderstanding of the meaning of adulteration of grain, particularly oats, it is said, has been more or less prevalent in certain localities. Some dealers have thought that it would not be a violation of the Food and Drugs Act to add water or foreign material so long as the grain "made the grade" under the requirements of the Grain Standards Act. Oats are apt to have a lower moisture content at this time of the year than the maximum permissible under the standards, and this presents a temptation, it is said, to add water before marketing, to increase the weight. The conferences made clear the fact that this is illegal.

As evidence of the interest in the conferences, it is said, that about 35 members of the trade attended the Nashville meeting, and practically every grain firm in the city was represented at that held in Louisville. Other conferences were held at Cairo, Ill., and Memphis, Tenn.

ARMY AIRPLANES "CRUISE" OLYMPIC BLOW DOWN

Airplanes, with Army officers as pilots and men from the Forest Service, United States Department of Agriculture, as observers, recently completed an air "cruise" of the Olympic Peninsula forests in the State of Washington devastated by the tremendous tornado of January 29. From data and photographs collected during these flights, forestry experts estimate that 6¾ billion board feet of timber was blown down by the storm, and to-day forms one of the greatest fire traps in the history of the country.

The storm-swept area extends along the west side of the Olympic Peninsula from Clallam Bay on the north, southward for some 90 miles to Grays Harbor, and inland from the coast a distance of from 20 to 30 miles. The storm was the most severe that has visited the Pacific coast, so far as evidence is available, an estimated velocity of 150 miles per hour being reported.

The amount of wind-thrown timber on State, Indian reservation, and private lands is estimated at approximately 6 billion feet, and on National Forest land at 750 million feet. District Forester George H. Cecil, of Portland, Oreg., who was an interested spectator from the "hurricane deck" of one of the planes, reports that the wind-thrown areas are very spotty—in some places practically all the trees being down, while in others but little damage resulted from the wind. Only a small amount of the down timber, it is said, can be salvaged, because of the lack of transportation facilities.

Should fire gain headway in this devastated region, forestry experts say that the most stupendous conflagration ever known in America would result. Special appropriations have been passed by the Federal and State Governments to meet this emergency, and strict measures will be taken to prevent fires starting from human agencies.

NEW SCENIC BEAUTIES FOUND IN GALLATIN NATIONAL FOREST

A motion-picture crew was sent by the United States Department of Agriculture to Montana last summer. It chanced upon a practically unknown region known by the humble name of Middle Creek Canyon. Motion pictures were made in the canyon and have just been released by the department under the name, "Up to Hyalite"—Hyalite being the name of a majestic peak at the head of the canyon.

The Hyalite Canyon—as it may be renamed—is part of the Gallatin National Forest in eastern Montana. According to the opinions of visitors it contains enough wonders to the square mile to make it a region worth perpetual fame. Other scenic beauties of the Gallatin National Forest are shown in "Tumbling Waters," also photographed in Middle Creek Canyon, and "Meadows and Mountains," which was photographed in the West Gallatin Canyon, one of the gateways to Yellowstone National Park and a famous feeding ground for elk.

JAPANESE CANE AS A FORAGE CROP.

Feeding tests with Japanese cane on the Iberia Experiment Station Farm at Jeanerette, La., conducted by the United States Department of Agriculture, have shown that this crop may be successfully utilized as silage for beef cattle. Greater care is required in the preparation of this crop for silage than with most other crops. It should be as mature as possible and then cut finely so that it may be tamped or packed very thoroughly in the silo.

Japanese cane silage, while much inferior in quality to that of corn or sorghum, has considerable value in some sections of the South. It is a very large yielder and will grow in many sections where neither corn nor sorghum will grow. The silage kept well at the Iberia Experiment Farm and was consumed by the cattle in rather large amounts to good advantage.

DAIRYING BRINGS PROFIT TO FARMERS IN SOUTHERN STATES

Supply Home Demand for Dairy Products; Build Up Soil Fertility.

Silos Important Part of Equipment—Development Shows Marked Progress in Quantity and Quality—Cotton Production Shows Large Increase on Dairy Farms.

More than 9,500,000 pounds of butter was made by 93 creameries in the Southern States in the year ending December 31, 1919. Thirty of the 54 cheese factories scattered throughout the mountain regions turned out 481,000 pounds of Cheddar cheese. Silos, modern dairy barns, and purebred dairy cows are becoming common. "Fifteen years ago dairying as an industry had been scarcely started in the Southern States," said a specialist in the Dairy Division, United States Department of Agriculture. "The South probably has made more progress in the last 13 years than any other section of the country. The increase in the number of dairy cows from 1907 to 1920 was more than 50 per cent. The increase for the entire United States during the same period was 13.8 per cent."

Dairy Improvement Has Been Gradual.

While this increase in number of cows has been large, it is pointed out by men working cooperatively with the Federal Government and the State agricultural colleges that the improvement in quality has been of even greater importance. Purebreds have been shipped in every year in large numbers, and great interest has been shown in the use of purebred sires. There are now 48 bull associations in these States. The latest census figures available show there are 5,184 head of purebred dairy cattle in South Carolina and 9,586 in Virginia.

"Dairy development began in the Southern States shortly after 1906," said one of the specialists, "but the improvement was slow at first. It was difficult to convince cotton growers in my territory that there was anything for them in dairying. But an object lesson was found finally that convinced them. On one side of a road was a field of cotton that yielded 2 bales per acre; on the other side a field gave half a bale. The farm that grew 2 bales to the acre had kept cows for five years, and the manure had produced the change. Farmers were taken from miles around to see those two fields.

"This little demonstration illustrates the purpose for which dairy cows were recommended in sections of the South—not to make dairying a major industry, but rather to establish a system that would supply the home demand for dairy products, and at the same time build up and maintain soil fertility, both by supplying manure and by enforcing a proper rotation of crops. This would make possible the production of cotton and other staple crops at greater profit. This was the aim of the southern dairy extension work, the first large-scale extension project attempted, which was started under the direction of the Dairy Division of the Department of Agriculture in 1906, and carried forward cooperatively with the State agricultural colleges."

One of the first things corrected was the poor feeding methods. Cottonseed meal and hulls formed the basis of the ration; farmers had no knowledge of balanced rations; silos were few in number, and it was not known generally that they could be built by farm labor. A few silos were erected in 1906 as demonstrations, and the idea began to grow slowly in popularity. Feed and production records, introduced into several herds in each State in 1906 and 1907, proved the value of silage. With silos once firmly established, better barns, better methods, and a demand for better cattle followed.

The value of silage compared with cottonseed hulls was very striking, even in the days when hulls were only $4 or $5 a ton. A dairy farm near Biloxi, Miss., where 40 tons of silage were fed instead of cottonseed hulls, reported a saving of $250 for the winter.

Silage Cheapens Cost of Production.

There are no figures showing how many silos have been built since 1906, but some idea of the great number may be gained from the fact that the extension men assisted directly in putting up 1,741. These silos served as demonstrations, and as a result many other silos were built in the various communities.

"From a local standpoint," writes one of the Federal agents of the Dairy Division, "the establishing of dairying in the boll-weevil districts of Mississippi has been one of the greatest achievements. Anyone acquainted with the despondency of farmers in 1912 in southern Mississippi, and who was enabled later to see the change wrought by the dairy cows, will agree that enthusiasm for dairying is well founded in a region that was floundering for some means of livelihood, now changed to a country in which the farmers are supplying whole milk for New Orleans and other points. This means good methods are being used."

INCLUDES ROOSTERS AND DOGS.

The excellent spirit with which live-stock owners are cooperating with the United States Department of Agriculture in live-stock improvement is shown by numerous reports from persons who dispose of inferior sires. One of the most thorough clean-ups is reported by a live-stock owner in Webster Parish, La.

"Within the last three months," he writes to the department, "we killed off seven roosters ranging from four to six years old. They were related to the female stock, and the offspring were weaklings and deformed. For the same reason we castrated two scrub boars, and killed off two cur dogs, and are going to get rid of scrub cats."

The present sires on the farm now include a purebred boar, four standard-bred Rhode Island Red roosters, and a purebred Airedale dog. Cattle and horses also are raised, and although no sires are owned the cows and mares are being bred only to purebreds.

BABIES, LIKE CALVES, MUST HAVE UNINTERRUPTED GROWTH

"You can not starve a young animal so as to check its growth, and still get good results." This comment by a Missouri farmer on the problem of preventing runtiness in live stock is in accord with the experiences of several hundred other live-stock owners who have contributed their experience to the United States Department of Agriculture's study of this subject. "Starvation," he adds, "caused by the robbery of the weak by stronger animals, improper and unscientific feeding, indigestion caused by careless feeding, unclean troughs, pails, and swill barrels—all of these things cause much of the trouble in farmers' experiences, especially in their hog lots."

In discussing the importance of milk as an essential food both for live stock and people, he remarks that while good pasture is very essential to the growth of calves, for veal calves no substitute will take the place of fresh cows' milk. "From my own experience," he states, "I know that no young animal will recover from retarded or stunted growth. As a child I was normal in size and my parents were of strong, sturdy, Scotch stock. When, some years ago, my parents settled as pioneers in Iowa, meat was a luxury, and milk and butter were unobtainable, at least for the first year. At the end of the year we got a cow and chickens, so our living conditions improved." He adds that malaria followed, and, although he outgrew the effects of the disease, he "never gained the physical strength, weight, or development of bone and muscle" that he should have had. "My normal weight," he says, "has been about 125 pounds, and still my health has been the best since I got over the 'shakes.' Keep your young animals growing."

Milk Must Be Kept at Low Temperature, Particularly During Hot Summer Months

Milk of ordinary quality held at 75° F., a temperature not uncommon in the summer, soured in 36 hours, while the same quality of milk held at 55° kept sweet for 80 hours, and at 40° for 180 hours. These results were obtained in an experiment carried on by the Dairy Division, United States Department of Agriculture, to determine the effect of temperature on the milk; and the results explain in a large measure why milk which has not been cooled on the farm—and kept cold—often is sour when it arrives at its destination.

The best and quickest way to cool milk to 50° F. is over a surface cooler. Use the coldest water available, and then set the cans of milk in a well-insulated tank filled with water below 40° F. A 10-gallon can of milk precooled with water at 55° F. and set in a tank of ice water at 37° F. was cooled to 50° in 20 minutes.

The use of a surface cooler is especially necessary when the time between milking and shipping is short. If warm milk is run over a surface cooler, and then set in a tank of water cooled with ice to 40° F. or below, it should not be difficult to cool milk to 50° within an hour after it leaves the cow. Because precooling with a surface cooler is not practiced and ice is not put into the cooling tank before the milk, much milk reaches the shipping station in summer at so high a temperature that it sours on the way to the city.

On many farms the water used for cooling milk comes from the general storage tank or from a spring. The temperature of such water when it reaches the cooling tank is much higher than when it leaves the well or spring. Well or spring water that has a temperature of from 50° to 55° F. frequently is warmed up to 70° or 75° F. before it reaches the cooling tank. Under such conditions more ice and a longer time are necessary for cooling.

Even under the best conditions, milk transported during hot weather usually is several degrees warmer by the time it has reached the railroad station. To make sure that milk reaches the city consumer in the very best condition it should not only be promptly cooled to 50° F. or below on the farm, but also should be protected during shipment, the specialists say.

To show the importance of protecting milk in transit during hot weather, four 10-gallon cans of milk cooled to 44° F. were hauled 13 miles from a farm to the railroad station. Can No. 1 was an insulated type; No. 2 was an ordinary can covered with a 1-inch felt jacket; No. 3 was covered with a half-inch felt jacket; and No. 4 was an ordinary, unprotected can. During the trip, with the air temperature at 80° F., the milk in the insulated can rose 1° in temperature, the milk in the cans protected with jackets rose 6°, and the milk in the unprotected can rose 20°. The cans were then shipped by rail in an ordinary baggage car for more than 1,000 miles at an average air temperature of about 80° F., to study the effect on the milk. In the unprotected can the milk had reached a temperature of 60° F. in two hours, or after it had traveled about 10 miles from the farm (before reaching the railroad); the milk in the can covered with the half-inch jacket reached 60° F. only after 11¼ hours, or about 268 miles of travel; the can covered with the 1-inch jacket traveled for 13 hours, or about 332 miles, before reaching 60° F.; and the milk in the insulated can did not reach 60° F. until after 25 hours, or 650 miles of travel.

COSTS 33 CENTS PER GALLON TO MARKET MILK IN MARYLAND

Market milk cost on the average 33.2 cents per gallon, $3.86 per 100 pounds, and $213.13 per cow per year on 94 northern Maryland farms surveyed recently by the United States Department of Agriculture, in cooperation with the University of Maryland. A preliminary report of this survey, just issued by the Office of Farm Management and Farm Economics, shows that, with an average sale price of 34.2 cents per gallon, 48 of the 84 farmers, or 51 per cent, failed to make a profit over the book cost, with all feed and labor charged at full current rates.

The average number of cows on the farms surveyed was 18.2, and the annual production varied from less than 4,000 pounds to over 8,000, pounds, with an average for all cows of 6,074. Practically all of the milk in question was shipped, either to Washington or Baltimore.

Of the total cost of production, about one-half ($121.38 per cow) was for feed, 56.6 per cent of this being farm grown. Grain fed totaled 2,259 pounds per cow per year, 512 pounds of this being grown on the farm. Hay fed totaled 1,793 pounds, practically all home grown. Man labor per cow totaled 291 hours, horse labor 29 hours.

These figures for feed and labor expenditures, in pounds and hours, are considered of greater importance than the costs as expressed in dollars and cents, since the former do not fluctuate greatly from year to year, and may be taken as basic in estimating the cost of milk production in the region surveyed.

ALCOHOL TEST OF MILK FOR FACTORIES THOUGHT PRACTICAL

The alcohol test shows good possibility as a practical and reliable test for determining the quality of milk for condenseries making evaporated milk, according to specialists of the United States Department of Agriculture who have conducted experiments at the Grove City, Pa., creamery. How generally the test can be applied will require further investigation, they say, but it is believed that it can be used to advantage in a large majority of factories. A report of the experiments has been published in Department Bulletin 944.

In making evaporated milk the most essential characteristic is the ability of the milk to withstand a temperature sufficiently high to insure subsequent sterilization without causing an objectionable curd. The experiments show that the alcohol test will determine this characteristic in many cases where the acid test will not.

The alcohol test as used in the investigation made by the specialists was prepared by mixing equal parts of 75 per cent alcohol and milk, and observing whether coagulation takes place. In case the milk shows a visible coagulation it is considered unsafe from the standpoint that the milk after evaporation will not stand the heat necessary for sterilization without becoming curdy. The amount or degree of coagulation is shown by the size of the curd particles formed. This test, the specialists say, is practical and easy to make in the weigh room.

"SURPRISE CONTESTS" HAVE IMPROVED MILK SUPPLY

Reducing the average of the 40 highest bacteria counts in the milk supply of a Western city from 450,000 to 26,000 per cubic centimeter, in three years, is an example of what is being accomplished in improving the quality of market milk through "surprise milk contests." These contests have been carried on cooperatively by the United States Department of Agriculture, State agricultural colleges, and local health boards for several years. In all cities where they have been held

an improvement in the milk supply has been reported.

On the day set for the contest, representatives of the city board of health take samples of milk and cream from the milk wagons of each dairy. It is a surprise, because no warning is given in advance; and it is a contest, because the samples are scored for purity and quality by officers of the board of health and the Federal milk specialist. Each distributor's product is given a score or rating which can be obtained by consumers from the local health office. The samples are analyzed and scored on the content of fat, solids not fat, bacteria count, amount of sediment, temperature, flavor, odor, and the bottle and cap, according to the score card of the Department of Agriculture.

Publicity concerning the contest is left in the hands of the city health department; usually the scores are published in the local papers. These scores or ratings are not based entirely on the samples taken in one day. All of the records which the city health department has on bacteria counts, fat, and solids not fat, since the last contest was held, are averaged and published with those obtained on that day. The contests are held usually every four months. As samples are taken without previous notice to distributors, they constitute a fair sample of the milk delivered to consumers, and the scores are a measure of the quality of the product sold.

Aided by the cooperation of milk distributors, these contests have brought some remarkable results in improving milk supplies in Western cities. In fact, in the market milk contest held at the National Dairy Show in 1919, which was open to all American cities, Western cities took seven of the eight prizes offered. The better class of distributors have welcomed these contests, as well as the follow-up work to improve the milk. In some cases complaints have actually been made because contests were not held often enough.

SEVERAL METHODS ADVISED TO ERADICATE SOW THISTLE

The perennial sow thistle is found throughout the Eastern States and in California and Colorado, and is a serious pest in the Red River Valley of North Dakota and Minnesota, according to the United States Department of Agriculture. On account of the wind-distributed seed it is practically impossible to exterminate it unless an entire community cooperates. There is no single method of control applicable to all conditions.

Several methods of eradication are recommended by the department. One is to plow in late June, before the blossoms have opened. After plowing, pack the soil immediately and then cultivate with a duck-foot or cutting type of cultivator at frequent intervals, keeping the ground bare until frost. This method will kill the weed in a single season if the work is conscientiously done.

The use of rye and of early oats has been successful against sow thistle. Some farmers plant spring rye on sow-thistle land in early May, cutting it for hay in late July, followed immediately by plowing and reseeding to fall rye or practicing the bare fallow until frost. Many farmers in the grain belt are turning to mixed farming. Close grazing with cattle or sheep will keep down sow thistle, but this is a temporary expedient.

Where the sow thistle occurs in small patches it may be eradicated by covering for an entire season with tar paper or other material that will completely exclude light. Cutting the plants and applying crude dry salt, or grubbing out the plants and burning the removed parts can be practiced in some instances. Sow thistle should never be permitted to go to seed if possible to prevent. The importance of using clean seed can hardly be overestimated, particularly in the sections of North Dakota and Minnesota which are at present free from the pest.

Cranberry Diseases Take Heavy Toll on This Important Crop

Long continued growing of cranberries on the same land under the same conditions has favored the development and spread of certain diseases, some of which at present are unknown or rarely found on wild cranberries. Because these diseases are gradually spreading and becoming more destructive specialists of the United States Department of Agriculture conducted a series of experiments with the most serious of them in order to determine control measures. These diseases are described and control measures given in Farmers' Bulletin 1081, Cranberry Diseases and Their Control.

The principal fungus diseases can be largely prevented by spraying with Bordeaux mixture, according to the bulletin. The large losses due to smothering can be avoided by proper methods and conditions of picking, storing, and handling the fruit. Much can be done to prevent the development and spread of fungus diseases and increase the vigor and resistance of the vines by carefully regulating the water supply of the bog during the growing season.

Though little attention has been given to the selection and breeding of resistant varieties, it is known that some are more susceptible to disease than others. In general, the smaller, firmer-fruited varieties are less subject to rot than those bearing larger berries. The bulletin suggests that when new plantings are being made, growers should use varieties that have proven most healthy in their locality.

BROKEN APPLE BOXES RESULT OF TOO FEW NAILS

Apple growers, finding that a certain standard type of bushel boxes in which they have been shipping fruit broke in many instances before it reached the market, recently asked the Forest Products Laboratory of the United States Department of Agriculture to investigate the cause of the breakage.

Several of these standard apple boxes packed with fruit as for shipment were tested in the revolving-box drum at the laboratory. Before they had gone a "journey" of average length in the machine most of the boxes had broken open and the drum was dripping cider. On investigation it was found that usually the parts of the box to loosen and give way first were where the four nails were holding an edge. Two more nails were therefore driven into each nailing edge of the remaining boxes. With this simple change the boxes stood just about twice as much rough handling.

Inadequate nailing is the chief fault of almost all the boxes examined by the laboratory. A few more nails would save shippers millions of dollars of fruit losses annually.

GROWERS STUDY MARKET CONDITIONS.

Some southern cabbage growers accompanied their car-lot shipments to market the past season in order to secure first-hand knowledge of shipping conditions and marketing practices. As a result, not only were sales made on a fairly satisfactory basis from the standpoint of the producer, but the growers obtained considerable useful experience through observing the handling of the cabbage in the markets. They studied conditions affecting shipments en route and became better acquainted with the demands of the large wholesale markets. The information and experience obtained were of particular value to growers located in sections where cabbage had not been grown commercially in previous years.

The plan was employed by growers having two or more cars ready for shipment at one time, and is a detail in the business of marketing farm products that experts of the Bureau of Markets, United States Department of Agriculture, say might sometimes be employed profitably by producers of other farm crops.

Two Milkweeds Poisonous to Live Stock Have Rather Widespread Distribution

Two species of whorled milkweed quite widely distributed in this country have been found, in recent studies conducted by the United States Department of Agriculture, to be poisonous to stock, though they are not so harmful as the extremely poisonous whorled milkweed, *Asclepias galioides* found in the southern intermountain region, and tests indicate that if grazing animals are closely confined to them injurious results will follow. One kind, known to science as *Asclepias pumila*, and found in the plains regions east of the Rocky Mountains, is about one-third as toxic as *Asclepias galioides;* the other, *A. verticillata*, variety *geyeri*, which grows in the Mississippi Valley, is about one-tenth as toxic. A description of these two species and a record of the experimental work conducted with them is contained in Department Bulletin 942, just published by the department. The poisonous properties of the whorled milkweed, *A. galioides*, are discussed in a previous publication, Department Bulletin 800.

Found in the Dry Plains.

Asclepias pumila may be called low-whorled milkweed or Great Plains whorled milkweed, according to the bulletin. The stems, which are often branching, are 3 to 12 inches high, tufted, and covered with fine hairs. It is found in adobe draws, in dry plains, and in foothills from southeastern Montana and southwestern North Dakota to the Texas Panhandle and central New Mexico. It is most abundant in the plains of Colorado. It has not spread widely, but is usually found in small patches in draws.

It was found that sheep fed on this milkweed develop weakness in the hind quarters which results in a staggering gait. There was in most of the cases depression, and in some evident trembling, but the staggering was universally present and was particularly noticeable. This symptom continued for several days, the pulse growing weaker and more rapid. In some cases the animal recovered, showing no serious after effects, but in cases which proved fatal the symptoms continued for from 7½ hours to 5 days. High temperatures developed, and the immediate cause of death was respiratory paralysis.

The other weed, *Asclepias verticillata*, variety *geyeri*, is a variety of the whorled milkweed of the eastern United States, the material studied being obtained in the Mississippi Valley. *A. verticillata* is distinguished by its long, fibrous roots and smooth pods, and the variety geyeri has numerous adventitious buds on the roots. It developed symptoms in live stock typical to those caused by other poisonous milkweeds, including weakness, especially marked in the hind legs, staggering, weak and rapid pulse, labored respiration, dilated pupils, increased temperature, bloating, spasms, and running movements. These symptoms with sheep appeared in from 14 to 20 hours and continued from 1 to 4 days.

Stock Raisers Should Know Them.

The bulletin points out that the losses by whorled milkweeds are for the most part caused by eating the leaves rather than the stems. Stock raisers, it is said, should become familiar with these milkweeds so they can identify them and guard against pasturing their stock, especially sheep, on range where they are found growing in large numbers and suitable forage is scarce.

ANNUAL WHITE SWEET CLOVER HAS IMPORTANT POSSIBILITIES

It has been determined that sweet clover, which grows luxuriantly along roadsides and out-of-the-way places, and which is grown in some sections as a forage crop, has one strain which is annual. The annual sweet clover occasionally appears in patches of the more common biennial form, either as single specimens or in small groups. Seed of the annual has been separated, and in recent years it has been propagated. These points are brought out in Department Circular 169, Annual White Sweet Clover and Strains of the Biennial Form, recently published by the United States Department of Agriculture.

The nature of this new variety, according to the bulletin, is such as to indicate that it may have important possibilities. Probably its greatest use for hay will be as an emergency crop. When a stand of clover has been winter killed, or when for any reason a farmer finds that his hay supply will be short, this variety can be seeded during the spring and, provided lime and the proper bacteria are present, yield a good hay crop. Where rainfall is sufficient it may be seeded even after wheat harvest. It makes a good growth the first season, and experiments in Iowa and Michigan have shown that it may be seeded with oats, to be harvested after the grain is cut. It grows rapidly, and for this reason will keep ahead of weeds.

The annual has a smaller and more woody root than the biennial form, and crown or resting buds are not formed. The stems, branches, leaves, flowers, pods, and seeds are indistinguishable from those of the biennial form, but during the season of seeding the plant grows more rapidly, blossoms, fruits, and dies. It blooms early and ripens seed in August when seeded early. Seed of the annual form is still very scarce and high priced and, since it can not be distinguished from seed of the ordinary biennial, should be purchased with caution.

HOW KOSHER MEAT TRADE AFFECTS FRESH MEAT MARKET

The kosher trade is a factor that must always be considered in gauging demand, say marketing specialists of the Bureau of Markets, United States Department of Agriculture, although figures showing the extent of the kosher meat trade in the United States are not available. The kosher system applies to poultry also, and during the religious holidays, on which orthodox Jews eat no meat except fowl, the increased poultry trade has a depressing effect on the beef, veal, and mutton business.

Considerable numbers of live stock are "koshered" in almost every city of size, but the trade naturally reaches its greatest volume in the great centers of Jewish population like New York, Jersey City, Boston, Philadelphia, and Chicago. New York City, with a Jewish population of approximately 1,500,000, is the largest kosher meat market in the United States and possibly in the world. Nearly 2,500 retail "kosher" meat shops are there located, and, according to Bureau of Markets specialists, of the 438,000 cattle, 517,000 calves, and 1,290,400 sheep and lambs slaughtered in Greater New York during the past year, approximately 98 per cent of the cattle, 90 per cent of the calves, and 15 per cent of the sheep and lambs were slaughtered and dressed in accordance with the Hebrew customs. The normal receipts of poultry in New York City are 165 cars, but around the Jewish holidays the poultry receipts increase fully 25 to 35 per cent.

The striking feature regarding the above live-stock figures, point out the department specialists, is that despite the fact that the kosher trade is confined chiefly to heavy, fat animals, and kosher slaughter produces a much greater tonnage of meat per given number of animals than the average resulting from slaughter for Gentile consumption, a larger number of animals is required to supply any given number of Hebrews

than a similar number of Gentiles. The reason for this is that only the forequarters are used for the kosher trade. The hindquarters are sold to the Gentiles. In New York City and Philadelphia the ribs, also, are sold to the Gentiles, which leaves only the chucks and plates, representing about 43 per cent of the carcass weight for the kosher trade. This practice is probably for business reasons, as the rib is wholly acceptable from a religious standpoint, and in most cities is included in the other portions of the forequarters used by the Hebrews.

According to Jewish law, the word "kosher" means "ceremoniously clean." All animals or fowls to be "koshered" are killed by a rabbi or his deputy, the chief difference between Jewish and Gentile slaughtering methods being that the Hebrew cuts the throat without first stunning the animal by a blow on the head, as is usually done in other than kosher killing. This seems to be based on the theory that the conscious animal bleeds more thoroughly than one that has been stunned, and, according to Jewish belief, no blood must remain in the meat when it is consumed. Partly in an effort to make this absence of blood doubly sure, the Jewish housewife usually salts her meat heavily and allows it to stand in the salt at least an hour. The salt is then washed off and the meat prepared for eating.

WYOMING BUILDS ROADS WHICH ARE FREE FROM DRIFTS

Wyoming is attempting to construct Federal-aid roads which may be used as highways throughout the entire year. This is being accomplished in some parts of the State by maintaining the grade line at an elevation which will insure the roadbed being swept clean of snow.

During 6 or 7 months of the 12 in Wyoming there is likely to be snow, which is generally accompanied by wind. Any portion of the highway which is below the surface of the surrounding ground will drift full of snow to a depth equal to the height of any near-by object above the grade, say specialists of the United States Department of Agriculture. By building the grade at an elevation slightly above the surrounding ground and the brush or weeds which border the road, it is possible to have a road which will be free from snow and prevent a soft, muddy roadbed when the snow melts.

This can not be accomplished in every case, but on flat or generally rolling country it has been found that snow can be practically eliminated from the roadbed by carefully studying the conditions and placing the grades sufficiently high. In many instances the excavation quantities may appear to be excessive, as where the grade is kept high when approaching a knoll in order to keep the per cent of grade low and at the same time to raise the roadbed sufficiently high over the knoll to prevent drifting of the snow, but slightly greater expenditure in this way at the time the road is built will save large expenditures later to clear away the snow.

WORLD PRICES LOWER FOR MEAT AND LIVE STOCK

The recent declines in live stock and meat prices in the United States appear to be part of a world-wide movement toward lower price levels, say specialists of the Bureau of Markets, United States Department of Agriculture. According to a report of the consul general at Auckland, recently received by the department, rump steak in New Zealand brought on April 1, 20 cents a pound; sirloin steak, 15 cents; corned brisket, 8 cents; legs of mutton, 11 cents; mutton chops, 13 cents; neck and breast of mutton, 7 cents; side of mutton, 10 cents; and veal 9 cents. These prices are based upon the normal rate of $4.8665 to the pound sterling.

The report also shows that between March 1, 1920, and March 1, 1921, fine steers in New Zealand dropped $3.65 per 100 pounds, selling at $10.46; prime and choice steers, $3.52, at $9.49 to $10.21; plain and ordinary steers, $4.01, at $7.30 to $9.00; cows and heifers, $5.22, at $4.87 to $9.73. Best wethers lost $2.71 per head, selling at $4.62 to $7.47; ewes, 67 cents, at $3.89 to $6.08; and lambs, $1.82, at $3.40 to $6.44.

Comparisons of these prices with prices in American markets is impossible because of a difference in standards of grading in the two countries. For example, a choice steer in New Zealand might be placed in some other grade in the United States.

KILL POCKET GOPHERS IN IRRIGATION PROJECTS

Pocket gophers burrowing in the ditch banks and adjacent bottom lands below the Elephant Butte Dam in Dona Ana County, N. Mex., cause seepage damage estimated at $60,000 a year. Irrigation farmers last year enlisted the directive assistance of the United States Department of Agriculture Biological Survey, and a project of extermination was undertaken in September. Both traps and poisoned baits were used.

One method was for a workman to patrol the banks of the main ditches, setting a string of 50 traps at short intervals. On his return he would find pocket gophers in two-thirds of them. In doing this advantage was taken of the rodents' dislike for warmth and light. Runways were found by means of a prod and a hole was broken under which the trap was set. The gopher would hasten to the spot to repair the break and find himself in the trap. Cubes of strychnine-mixed bait were dropped into similar holes on level ground.

A survey taken early this spring by a rodent inspector of the Biological Survey indicated that 95 per cent of the pocket gophers had been exterminated, practically eliminating the $60,000 annual damage. The total cost to the farmers was about $3,500. The president of the Elephant Irrigation Co., in a letter declared the extermination efforts to be the best work ever done for the district.

FIGHTING GRASSHOPPERS AND OTHER CROP PESTS IN UTAH

More than 1,000 bushels of grasshoppers were caught by the so-called "balloon" hopper catcher in Plute County, Utah, alone last year. In the other counties in the State the bran-mash-arsenic bait was used, and millions of the hoppers were destroyed. The campaign against the grasshopper covered 26,958 acres of Utah farm land and the estimated saving amounted to $251,145.

The English sparrow and the alfalfa weevil, as well as the grasshopper—all of them factors which reduce the profits of the farmer—have been fighting a losing fight in Utah during the last two years. The county agents and the farmers of that State are aggressive. The English sparrow population in Utah was reduced in 1920 by actual count 436,165, while the estimated saving from sparrow control during the summer of 1920 amounted to $112,944. In this campaign 10,051 pounds of poison wheat were used.

The alfalfa weevil has caused untold losses to the alfalfa farmers in the Utah-Idaho district. In sections where farmers have used the spray advocated by the United States Department of Agriculture for combating the pest, the production of alfalfa has exceeded that of the unsprayed fields by an average of one-half ton to the acre. The weevil parasite introduced from Italy has helped also to lessen the ravages of the weevil. During the last summer 10,113 acres of alfalfa land were involved in the demonstrations to combat the weevil and 18,986 pounds of poison were used in spraying. The saving effected from the control is estimated to be $96,967.

CONDEMNS PLAN TO CREATE ALASKAN DEVELOPMENT BOARD

(Continued from page 1.)

malfeasance in office, and Congress itself would have over it only such control as it might exercise by withholding appropriations or by repealing the law.

"In effect, this measure proposes to set up a branch Federal Government having jurisdiction over certain properties and functions in the Territory of Alaska, making it practically independent of the Federal authority at Washington. Although it would consist chiefly of members appointed by the President, the majority would not be subject to his control even in matters of national policy or (as in their administration of the migratory bird act) in matters which concern treaty rights and involve questions of foreign policy. The degree of its independence of the President is indicated by the rather extraordinary proviso that the board shall submit an annual message to Congress 'recommending such legislation as it may deem advisable.'

Department's Activities in Alaska.

"The Department of Agriculture has for very many years carried on certain activities in Alaska. The Weather Bureau has nine stations there. The Biological Survey has four stations for the purpose of looking after the reindeer and land fur-bearing animals. The Forest Service has charge of the national forests. The Bureau of Roads has charge of forest road construction under the Federal aid act. The States' Relations Service has five agricultural experiment stations at different points in the Territory. The Bureau of Markets, while maintaining no representative there, gathers certain statistics. Under this measure all of these activities would be discontinued.

"Our most important work there is in connection with the forests. There are in Alaska some 20,000,000 acres of national forests, created between 1902 and 1908. Up to the present time these forests have not been utilized extensively because of the distance from market and the relatively small local demand for lumber. In 1906 the lumber shipped into Alaska composed 86 per cent of the total lumber used there and but 14 per cent was cut from the national forests. In 1919 these percentages were exactly reversed, 86 per cent of the lumber used in Alaska being produced locally and but 14 per cent imported, this latter being chiefly Douglas fir for special construction purposes.

"We have in Alaska the opportunity to create a second Norway. Under intelligent management these forests can be made to produce for all time to come a quantity of paper equivalent to one-third of the present annual requirements of the United States. When we note what has happened in the past to our great forests not under Government control, surely the importance of retaining control of these national forests in Alaska and of maintaining them on a safe producing basis must be evident.

"The time is not far distant when the increasing scarcity of lumber and of paper and the consequent high prices will make it necessary for us to draw heavily upon our national forests in Alaska. If we are to profit from past experience, we must not permit them to be exploited but rather so administer them as to maintain their production.

"These national forests have been and are being administered on a basis of national and local cooperation, with constant study of development and use. The plan worked out by the department is being accepted as fair by a number of substantial business interests engaged in the manufacture of paper. In January last a small pulp plant began operation in Alaska under a national forest purchase. Two large tracts of timber are now being advertised for sale upon application from interests which contemplate the building of complete newsprint paper mills.

"Other applications are pending, and there seems a fair prospect that the paper industry will be established in Alaska just as rapidly as market and transportation conditions justify. The purpose is to put the making of paper in Alaska on a sound and continuing basis, developing a perpetual industry by limiting manufacturing capacity to the raw material which the forest will continue to produce.

"A good deal has been said concerning the declining population in Alaska. It is interesting to note that while other parts of Alaska have been going backward and losing in population, that part of the Territory embraced in the national forests has increased steadily in population and prosperity.

"Surely it would be most unwise and greatly against public interest if we should now scrap all the work which has been done by the Federal Government with these forests in Alaska, withdraw from the Territory, and turn over the forests to a local board to do with them as it might see fit.

Agriculture May Become Important.

"While the agriculture of Alaska is as yet largely undeveloped, the work which has been done there at the experiment stations maintained and directed by the Department of Agriculture has been most helpful. It is the sort of work which must be continued if Alaskan agriculture is to be developed upon a basis which will maintain the population as its industries are developed; otherwise the cost of imported food will be so high as to retard greatly industrial development. The withdrawal of the Department of Agriculture from this field of work certainly would be greatly to the disadvantage of the people of Alaska.

Federal Power Commission.

"Not long since, Congress created the Federal Power Commission, which is composed of the Secretary of War, the Secretary of the Interior, and the Secretary of Agriculture. This was the result of 10 or 12 years of nation-wide controversy over Federal hydroelectric power legislation. After long debate it was finally agreed that uniformity of policy and action was essential to the sound and prompt development of our water powers. This Federal Power Commission is just now getting established, and it is reasonable to expect that under its administration the development of water power throughout the Nation will be promoted on sound economic lines. This is a matter of great importance to Alaska.

"As I have pointed out, the manufacture of paper is likely to be one of the dominant industries in that Territory. A large supply of timber and an abundant supply of water power are essential to that industry. The erection of pulp mills and the development of hydroelectric power in southeastern Alaska will go hand in hand. Therefore, it would be most unfortunate if that Territory should be deprived of the services of the Federal Power Commission and the power resources of Alaska placed in the hands of such a board as it is now proposed to create, and deprived of the help of all the governmental organizations from which otherwise it might secure technical assistance and advice.

"There seems to be a feeling that development in Alaska has been retarded through restrictive Federal control. Her decrease in population has been used to support such contention. A very slight study of the history of Alaska will show that there is small foundation for the notion that Government restrictions have retarded development in that Territory.

"Aside from furs and fisheries Alaska's first great commercial stimulus came from the bonanza gold discovery in the Klondike in 1896. The principal route to the Yukon region was through American territory. The majority of the people who joined in the stampede across White Horse Pass were from the States. Naturally they spent a great deal of money in Alaska as they went in and

came out, and while the boom continued that part of Alaska, as well as Seattle, flourished.

Gold Production Declining.

"The discovery of the rich gold regions at Nome resulted in a large placer mining population on the Seward Peninsula, while the discovery of the rich placers in the Fairbanks region in 1902 was followed by a stampede which made Valdez a great point of entry. As the yield of gold declined the population declined, and to-day Nome retains probably not more than 10 per cent of her former maximum population, while Fairbanks contains few more, except that a small agricultural community has sprung up there. The decrease in the white population is due largely to the playing out of the mining industry, and not to restrictive regulations imposed by the Federal Government.

"We have many similar illustrations in the States; for example, Virginia City, Mont.; Warren, Idaho; and Boise Basin. The camps at the latter point once boasted a population of approximately 20,000. To-day there are probably fewer than 500 people there. Between 1916 and 1919 the production of gold in Alaska dropped nearly 45 per cent and the labor employed in all forms of mining was reduced one-half. We must remember that up to the present time men have not usually gone to Alaska with the thought of making their homes there. The purpose has been to make a 'stake' and get out.

"We have now come to a time when economic conditions should bring about a gradual development of Alaskan industries with a corresponding increase in population. This development should be on a sound basis and not the result of temporary and reckless exploitation of public property.

"The needs of Alaska would not be met by the enactment of this measure and the establishment of this board. It would have local authority, but would lose all the advantages of specialization and direct personal responsibility which have so largely contributed to our national prosperity and success. Such an arrangement would deprive the administrative officers of the Territory of the services of the great scientific organizations which the Federal Government maintains. It would disrupt the well-laid plans for sound development.

"Because of its remoteness from the seat of government the administration of governmental activities in Alaska should be upon a somewhat different basis than the administration in the States. This can be accomplished under congressional permission and through whole-hearted cooperation. The way has been opened through the Interdepartmental Alaska Committee, which was organized in December, 1920. If a similar organization should be established in the Territory by bringing together the representatives of the various departments, many of the difficulties of administration could be removed.

"There is real need for congressional legislation along certain lines. For example, the Department of Agriculture has asked of Congress authority to make sales of timber in Alaska up to a maximum of $1,000 in value without the formality of 30 days' advertisement. Such authority is needed to avoid exasperating delays and inconvenience.

Additional Revenue to Build Roads.

"The department also has asked Congress for permission to turn over to the road and school funds 50 per cent of the receipts of the national forests, instead of but 25 per cent as at the present time. This additional revenue would be most helpful to the people of Alaska during the pioneer period.

"More work should be done in properly mapping and estimating the timber in the national forests of Alaska, and more data should be compiled with regard to the water powers tributary and available for the utilization of such timber. The department has asked for additional funds to be used for this purpose. They are much needed.

"The homestead law should be amended as it now applies to Alaska so that surface rights may be segregated from mineral rights. There are large areas in Alaska underlain by lignite, some of them the best agricultural land in the Territory. If these areas were located in any of the States the homesteader would be allowed to file and secure surface patent, the coal bodies being reserved by the Federal Government. This provision has not been extended to Alaska, but it should be.

"I am told that at the present time there is in Alaska a land seeker who claims to represent about 100 residents of the Dakotas who wish to settle in Alaska if he reports favorably. Much of the available agricultural land in Alaska is underlain with coal and is classified as coal land. The one thing which is most likely to prevent a favorable report is the fact that until the law with reference to homestead entries for lands classified as coal land is changed, title to the surface of the land can not be obtained. This proposed measure does not provide for a change in the law, and yet that is one change which would do much to stimulate permanent settlement in Alaska.

"The Forest Service and Biological Survey have authority to grant permits for fox farms within the national forests and upon certain specific islands. Uniform regulations have been worked out to secure full harmony of action, but I understand that the Department of the Interior is without authority in law to issue comparable permits for the use of islands under its jurisdiction. Congress should grant such authority.

Federal Agents Have Much Authority.

"Because of the distance it is important that representatives of the Federal Government on the ground in Alaska should have the greatest possible authority consistent with the sound administration of Government affairs. The Department of Agriculture has recognized this and has granted such authority to its representatives in Alaska to the full practical limit of the authority granted the department itself. Ninety per cent of the work of the national forests is handled locally without reference to the department at Washington or elsewhere. Only in the case of questions of large importance involving heavy expenditures or investments, or new and untried plans or policies, do we require reference to the department at Washington. This also applies to the work of the Biological Survey and to the management of the agricultural experiment stations.

"The work the department does for Alaska is mostly controlled by its representatives in Alaska, while from Washington we furnish technical advice and special assistance for limited periods, thus making available to Alaska the full knowledge of a department which has been said to be the greatest scientific department of agriculture in the world. The point I wish to make plain is that the widest possible latitude has been given to our Alaskan representatives in the conduct of their work.

"The establishment of an Alaskan development board and the transfer to it of duties now performed by Government departments would not in itself provide for the maintenance of work necessary to be done there. There would need to be built up a technical staff of experts to replace those now available in the departments which have to do with Alaskan affairs. Forestry, fur farming, the conservation and perpetuation of game, and the conduct of agricultural experiment station work each contains a great variety of highly technical problems which must be solved through scientific investigations and experiments conducted by trained technical experts. To deprive the people of Alaska of the benefit of the equipment and advice which they now obtain from the Government departments

would be most unfair to them and would greatly retard the development of their industries.

"So far as the Lacey Act and the migratory bird treaty act are concerned, these are national in scope and were enacted for the very reason that it was found that the States could not effectively perform the service which is maintained under these acts of Congress. To cut out one Territory and place the enforcement of these acts in charge of a board separated from the administration of the acts in the rest of the country simply destroys national coherence in the administration of a treaty, impairs the effectiveness of enforcement, and increases the cost.

Fur Industry Very Important.

"The land fur-bearing animals of the Territory form one of its valuable natural resources which is being dangerously depleted in many districts and needs the careful guardianship which can be afforded only by their retention under the experienced supervision of the experts of the Biological Survey. The development of the fur-farming industry will reach large proportions if the Territory is properly directed. The transfer of duties relating to fur-bearing animals will not in itself secure the proper development of this important industry. The continued and successful growth of the fur-farming industry is dependent on technical investigations which are now being conducted by the Biological Survey in the United States as well as in Alaska.

"The conservation of the game resources of Alaska is of the greatest importance. Game continues to be one of the primary food resources without which the prospecting and development of the more remote areas of the Territory would be difficult and sometimes impracticable. In many areas game has greatly decreased and is still decreasing. The service of the most expert scientific knowledge concerning game and its conservation such as is available in the Biological Survey is vital in insuring the perpetuation of this invaluable resource.

"For the reasons stated it seems to me that the enactment of this measure would be highly prejudicial to national interest and to Alaskan interests as well. It would remove wholesome checks against the exploitation of our vast national resources and would deprive Alaska of the technical help of the Federal agencies which combine long experience and the best scientific knowledge in studying and developing specific natural resources.

"The people of Alaska are entitled to the same sort of help from the Federal Government that has been so freely granted to all other States and Territories. Further, because of their remoteness, they are entitled to have on the ground Federal representatives who are thoroughly familiar with Alaskan conditions and clothed with the power to act promptly. By creating an Alaskan board composed of representatives placed there by each of the Federal agencies now active in the Territory and of one or two permanent residents of Alaska, every proper purpose sought to be accomplished by this measure could be brought about, without jeopardizing National and Territorial interests."

Sheep Herders Should Exercise Extreme Care to Prevent Losses from Death Camas

Death camas causes heavy losses of sheep in the spring and early summer. It is not unusual for several hundred to die within a day or two. The plants frequently grow in thick patches, and because of their grasslike leaves are overlooked. If sheep are close-herded in such places many of them will be poisoned, and most of those poisoned are likely to die.

Avoid Ranges Infested with Death Camas.

Especial care should be used when sheep are taken from the cars and released for grazing. If they have not been fed, as is frequently the case, and are turned out on a range where death camas is abundant, the resulting losses may be very heavy. There have been many cases of this kind. If death camas is present that part of the range should be avoided. If it is necessary to trail sheep where death camas is known to grow, the animals should be well fed before coming to that place.

Sheep herders should learn to recognize the plants and avoid them. The United States Department of Agriculture has published Department Bulletin 125, *Zygadenus*, or Death Camas, which tells about the plants and their effects; it has also published Bulletin 575, Stock-Poisoning Plants of the Range, which gives illustrations, many colored, of the principal poisonous plants of the western United States.

All Kinds Not Equally Poisonous.

There are several kinds of death camas and until recently it has been supposed that all were equally poisonous. As the result of recent experimental work, which is in course of publication, it has been found that the death camas which in the western mountains grows at elevations of 8,000 feet and upwards is only slightly poisonous and probably never injures range sheep. All the forms growing at lower altitudes are dangerous, but this mountain death camas probably never does any harm. It has thin and rather erect leaves, grows in meadows and in damp ground, sometimes among the aspens, while the other kind, which approaches the lower limit of the mountain death camas, grows in dry places, and has thick, spreading leaves. The herder need not fear the mountain death camas, but should shun all the other forms.

LARVAE OF CRANE FLY DESTROY GRASS AND GRAIN

A poisoned-bran mash, similar to the one now used against grasshoppers, has been developed by entomologists of the United States Department of Agriculture as a control measure for saving grasslands, pastures, and grain and alfalfa fields in California, which for years have suffered extensively from the destructive work of a worm, known to be the maggot or larval stage of a "crane fly." Specialists of the Government laboratory at Sacramento undertook the work of formulating control measures against the insect, analyzing the habits and studying the life history of the pest.

These blackish worms, from one-half to one inch in length, have become so abundant that investigation disclosed as many as 300 to a square foot of land. They come from the ground and feed during the night, eating the tender succulent grass, grain, or alfalfa shoots. With their occurrence in such large numbers over a given area, specialists say, it was not remarkable that in a short time such fields presented a dead, brown aspect and became useless for grazing or agricultural purposes.

The poisoned-bran mash found to be effective against the pest is composed of wheat bran, 25 pounds; Paris green, 1 pound; and water, to make a crumbly mash, 3 gallons. The bran and Paris green are mixed thoroughly, then the water added until a crumbly mash is secured. This should be spread broadcast on infested land at the rate of 10 to 20 pounds an acre. From 70 to 90 per cent kill resulted in the test experiments.

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NEW ENTRANCE TO MISSOURI BOTANICAL GARDEN DEDICATED

Unique Scientific Institution Honors Memory of Founder.

Secretary Henry C. Wallace Commends the Spirit Which the Late Henry Shaw Showed in Giving These Wonderful Gardens to Humanity.

The dedication of a new gateway to the Missouri Botanical Garden on May 10 was made the occasion for a memorial meeting to Henry Shaw, the founder. Henry C. Wallace, Secretary of Agriculture, was one of the principal speakers. The Secretary said:

"It is a privilege to be here to-day and an honor to be asked to speak briefly on such an occasion. You are in a way dedicating anew to the use of the public these wonderful gardens, which for more than half a century have been an inspiration to those who visited them, and which have contributed much to our store of knowledge of God's great vegetable kingdom.

"Instinctively our thoughts turn first to that generous-spirited citizen who made all of this possible. I wish I might speak from that intimate personal fellowship which perhaps some of you who are here to-day enjoyed. But the spirit of a man is made manifest, not alone while he is here with us but by the things he does and says which live after he has passed on.

Gratitude to Henry Shaw.

"So thousands who could not know Henry Shaw in the flesh nevertheless have a deep sense of gratitude to him and of kinship with him. Hundreds of thousands of those who neither knew him nor have known of him nevertheless will be indebted to him. For the influence of the work that has been done here, and indeed the influence of these gardens themselves, has spread throughout the Nation. The lives of thousands unconsciously have been modified and enlarged and made happier through this influence; and these in turn, knowingly or unknowingly, pass on to others the inspiration received through the opportunity that Henry Shaw made possible to them.

"What sort of a man Henry Shaw was, and what sort of spirit dominated him, are revealed both in his action back in the early sixties, when he invited his fellow citizens to come freely and share with him the beauty and inspiration of these gardens developed and maintained at his own expense, and when later he endowed them in his will and made wise provision for their continuance through generations to come. And when we come to read his will we find the spirit of the man made plain in this sentence:

"'I hereby devise and bequeath two hundred dollars annually to the bishop of the Episcopalian Church of this diocese in consideration (if he approve the same) that an annual sermon be preached in such church and by such minister as he may select, on the wisdom and goodness of God as shown in the growth of flowers, fruits, and other products of the vegetable kingdom.'

"Many men favored of fortune gather to themselves treasures to be hidden away and enjoyed by themselves alone or by some few personal friends. There seemed to be none of this selfishness or snobbery in Henry Shaw. He wished to share the things that satisfied his artistic and spiritual nature, not with a chosen few alone, but with all who have the capacity to partake with him. And the sentence from his will, which I have

(*Continued on page 8.*)

VALUE OF PUREBREDS CONSPICUOUS.

The value of purebred live stock, say specialists in the United States Department of Agriculture, is most noticeable in those cases in which the capability of the animals is measured most directly. Among farm animals the best illustration can be found in dairy cattle, though careful yearly tests of milk and butterfat production are relatively recent affairs. The enormous differences among dairy cows when given the same opportunity have been brought out clearly in a great number of cases, and these differences are strongly inherited through both the sire and the dam. The average production for purebreds and grades is much above the average of all milk cows, which is about 4,000 pounds of milk and 160 pounds of butterfat annually.

NATION-WIDE OBSERVANCE OF FOREST-PROTECTION WEEK

Prompt and Cheerful Support Given by Every Department of Business.

Many National Organizations Send Out Letters or Specially Prepared Circulars Calling Attention to Need of Preventing Forest Fires.

Nation-wide cooperation was given in observing Forest-Protection Week, which began Sunday, May 22. The governors of 14 States issued proclamations impressing the people with the importance of using every possible precaution to prevent fire throughout the year, not only in forests but in every other place endangering the safety of human life and property. These 14 States are Arizona, California, Colorado, Idaho, Illinois, Maine, Massachusetts, Mississippi, New Mexico, South Dakota, Utah, Virginia, Washington, and Wisconsin.

In addition to this help, the governors of seven States—Minnesota, New York, North Dakota, Oregon, Pennsylvania, Texas, and Montana—prepared special statements urging the general observation of Forest-Protection Week, while eight governors declared themselves favorable to the best possible form of forest protection, although issuing no formal proclamation. These were Arkansas, Connecticut, Kentucky, Louisiana, Missouri, New Hampshire, Rhode Island, and South Carolina. Other governors, known to be friendly to the protection and conservation of forests, doubtless have issued proclamations or statements which have not yet been received in Washington.

Widespread Support from Business Interests.

Probably no previous effort inaugurated by the Forest Service of the United States Department of Agriculture has received such prompt and cheerful support from every department of business. The Chamber of Commerce of the United States, the International Kiwanis Clubs, the American Automobile Association, National Board of Fire Underwriters,

International Association of Rotary Clubs, National Fire Protection Association, the General Federation of Women's Clubs in virtually every State in the Union, and the Daughters of the American Revolution all sent out letters, or specially prepared circulars, drawing attention to the special purpose of the week. The American Automobile Association sent copies of the letter issued by the Secretary of Agriculture to every club in the country. State foresters in many States started one form or another of publicity to induce talk and create continued interest in the one big subject of the week.

The Boy Scouts of America, considered by the Forest Service to be one of its most efficient allies in preventing forest fires, issued a special forest-protection number of the monthly publication Scouting, for May, and Forester W. B. Greeley, and Chief Scout Executive James E. West, of New York, sent 10,500 letters to scout masters and scout executives everywhere in America. The Post Office Department ran 22 fire-prevention cancellation dies in many of the principal post offices throughout the Nation, so that every letter sent from those offices carried the message to the recipients. In six western districts of the Forest Service, with headquarters at Denver, Colo., Albuquerque, N. Mex., Ogden, Utah, Missoula, Mont., Portland, Oreg., and San Francisco, Calif., officers of the service conducted publicity campaigns, and 2,000 rangers throughout these States put forth every effort to make the people think about little else, for a week, at least, except how to keep down losses from fire.

A Week Long to Be Remembered.

In Washington, D. C., the Daughters of the American Revolution observed the occasion by planting trees, and in other ways did all they could to make the week one to be remembered. The American Forestry Association held a special Forest Protection Week demonstration in Rock Creek Park on Monday. The National Board of Fire Underwriters sent out 160,000 copies of its official publication, Safeguarding America Against Fire, to every city and town. In this issue it was shown that in the last five years the forest fires in 45 States have cost the country $85,715,747 for timber burned on nearly 56½ million acres. At least 80 per cent of these fires were caused by human agencies and were, therefore, preventable.

The Red Plague, a special statement issued the week previous by the Forest Service, said: "Three-fifths of the original timber supply in the United States is gone. There is now consumed annually more than 51 billion board feet of material of saw-timber size, and nearly 5 billion feet is destroyed by fire, insects, or other agencies. Our depleted forests are growing less than one-quarter of this total amount. Not only are the remaining virgin forests being cut heavily, but we are using up the second growth and small material on which depends our future supply. In all, the requirements of our population are close to 300 board feet per capita. The answer to the forestry problem is not to use less wood, but to grow more—to put our idle acres to work producing trees. The crux of the problem lies in preventing forest fires."

Chinch Bugs Threaten Injury to Corn, Wheat, and Rye Crops of Missouri

Energetic measures against the chinch bugs which threaten injury not only to the wheat and rye crops of Missouri, but to corn as well, are urged by the Bureau of Entomology, United States Department of Agriculture, in view of reports of an impending outbreak of the pest in that State. Widespread and severe infestations of the pest are reported in the whole central Mississippi Valley region, starting in northern Texas and extending in a northeasterly direction over Oklahoma, Kansas, and Missouri, touching Nebraska, and extending across Illinois and Indiana into Michigan.

Generally Distributed Through State.

The chinch bugs, latest advises say, have had a mild winter and are generally distributed throughout the Missouri wheat and rye fields, breeding in considerable numbers in the St. Louis neighborhood early in May. The farmers, it is said, have been watching the pest more closely than usual this spring, but all of them do not know yet that there is danger that their corn may be damaged worse than last year. Wheat is likely to ripen one or two weeks earlier than normal this year, and the rains delayed the planting of corn.

The bugs are certain to migrate when the wheat ripens and the corn will be so backward that damage by the bugs is likely to be very severe. It is well to expect the bugs to begin migrating to corn as soon as the wheat butts begin to harden into maturity 10 days before the heads are ripe. Any barrier work or creosote repellant line work should begin at that time to be effective, it is said, as the bugs will migrate in increasing numbers as the wheat stalk ripens upward. The binder will shake loose those not already out and stragglers will continue to migrate in serious numbers for 5 to 15 days after harvest. Barriers, therefore, must be maintained from the time of migration until possibly two or three weeks have elapsed.

It will be found of much value to sow two drill widths of millet between corn and the near-by fields of wheat and rye. The more quickly this is done the better, so as to make as good growth as possible of this trap crop before the bugs attack it. When the bugs have migrated into the trap crop it should be plowed 7 or more inches deep. Care must be taken to plow deeply and well, then to pack the ground with a drag or harrow or roller. Little time or work is required to make this strip and the cost is small. It has hitherto been found very profitable.

CLOVER PESTS CAUSE FARMERS SERIOUS LOSS

Decided increase in the destructive attacks by the lesser clover leaf weevil, a serious insect pest, in the States of Illinois, Indiana, and Missouri is reported through the country-wide insect pest survey conducted by the Bureau of Entomology, United States Department of Agriculture. This pest, it is said, in conjunction with the clover-leaf weevil and the clover-root curculio, sometimes accompanied by a fungous disease, is becoming so serious in parts of Ohio that alsike and sweet clover are being substituted by farmers for red clover, it being impossible to grow the latter crop successfully.

TOBACCO BLUE MOLD CHECKED.

The blue-mold disease which developed in the tobacco seed beds in the Florida-Georgia district in March, and which later spread to the fields, has been arrested by the dry weather of the latter part of April and the first week of May. The heavy rains in the middle of May did not bring about further development of mold on the newly developing leaves. The crop is growing well and the United States Department of Agriculture believes it probable that there will be no material further development of the disease.

UNITED STATES IMPORTS MANY KINDS OF MEAT

Fancy Food Products and Delicacies for Epicures and Foreign Residents.

All Products Carefully Inspected by Department of Agriculture to Insure Healthful Article—Large Quantities of Imported Lamb Now Being Sent to England.

Although the United States is the greatest meat-producing country in the world, it has received considerable quantities of meats from other countries, according to the records of the United States Department of Agriculture. Last year the United States imported 160,000,000 pounds of meat of all kinds, about two-thirds of which was New Zealand lamb. This lamb is now being exported to England. While meat imports of last year show an increase over the preceding year, they do not establish a record, as the imports for 1914 were 323,000,000 pounds.

Imports Include Many Specialties.

The principal kinds of meat which the United States has been receiving lately from foreign countries are fresh frozen beef, fresh frozen mutton, canned corned beef, veal, sausage, beef extract, and fancy meat food products. Such products include pate de foie gras, liver paste and truffles, mortadella and salami sausage, brawn, etc.

The fresh beef and mutton arrive principally in frozen condition, though some chilled beef is received. The beef usually is heavy, well marbled, and of very good quality.

As many as 100,000 lamb and mutton carcasses arrive on a single steamer from Australia and New Zealand. The lambs are quite uniform and of good quality.

Very little fresh frozen beef and mutton have been received from Argentina and Uruguay during the past few years, due to the European demand and the scarcity of steamers equipped with refrigeration.

Practically all of the imported dried beef comes from Uruguay. This is a product peculiar to that country and Argentina, large quantities of which are consumed by their own people.

All kinds of meat and meat food products are imported from Canada. Such products are shipped to this country by rail in the same manner as our own meats are shipped from one State to another. The quality of Canadian meats is good, and certain products in which that country specializes are in great demand.

Since 1918 importations from England, France, Italy, Denmark, and Spain have been gradually increasing. Meats from these countries, however, have little effect on the meat market of this country, as the shipments are small and consist mainly of meat delicacies, such as pâté de foie gras, fancy sausage, hams, etc., which are consumed by epicures and foreign residents.

Canned beef and beef canned with mushrooms are received from Japan, but in very small quantities, and are used exclusively by Japanese residents.

Great Variety of Labels and Containers.

Chinese meats consist of hams and sausage. The hams are cured in a manner similar to ours, have a peculiar odor, are small, and of poor quality, judged by American tastes. The sausage is prepared from pork, and is about the size of a thin frankfurter, is hard and oily, and has an odor pronounced unpleasant to the occidental nose. These products are consumed exclusively by the Chinese, who consider them quite a delicacy.

The cases and cans in which foreign meats are shipped vary in accordance with the customs prevailing in the country of origin. These containers are marked or labeled to show the true name of the product, the name and address of the manufacturer, and the net weight of the contents. The reading matter on the containers is in the language of the country of origin, and on some containers are shown odd pictures of animals and birds. The meats in most instances are also marked or tagged to show that they have been properly inspected by the Government of the country from which they were shipped.

All Import Meats Must Pass Inspection.

Under the import meat inspection regulations, no meat or meat food product is eligible for importation unless accompanied by a certificate signed by an official of the national government of the country from which it is shipped, showing that the animals had received an ante-mortem and post-mortem inspection at the time of slaughter, and that the product is sound, healthful, wholesome, and otherwise fit for human food, and has not been treated with and does not contain any preservative, coloring matter, or other substance not permitted by the regulations of the United States Department of Agriculture.

In other words, meats from foreign sources must, before admission to this country, comply with essentially the same regulations as domestic meats that are shipped interstate. The foreign certificate, though giving the importer permission to have a product inspected, does not entitle him to formal entry of meat. Actual entry depends upon the result of inspection made by inspectors of the Department of Agriculture when the product arrives in this country.

This inspection consists in checking the meat with the foreign meat inspection certificate for the purpose of identifying the product, after which a thorough physical as well as laboratory examination is made, and if no disease or condition which renders the product unfit for human food is found it is marked "U. S. Inspected & Passed" and permitted entry.

Meats which are refused entry on account of not complying with the Federal meat-inspection regulations are either exported or rendered unsuitable for food purposes.

THE MARKETING OF BROOM CORN.

Broom corn is marketed to-day by practically the same methods in use 70 years ago, according to statements made by specialists of the Bureau of Markets, United States Department of Agriculture. It is a small crop compared with many other farm products and owing to its limited use has failed to command the attention of the marketing agencies which have played such an important part in developing the highly efficient systems for the distribution of the more important products. Broom corn fiber has very little use except for the purpose of making brooms, but the demand for brooms has remained quite uniform over an extended period, and about 50,000 tons of the raw product are marketed each year. Approximately 300,000 acres of land are required for the production of this amount. Special studies of the present methods of marketing broom corn are being made by the Bureau of Markets.

OPEN RANGE COMING BACK.

The range stock business in Arizona is looked upon as an industry entirely separate from farming, and farming with stock raising. Reports received by the United States Department of Agriculture show that the old type of range is not continuing as profitably as it was a decade ago. The old-time antagonism between stockman and farmer is being overcome gradually. There is now a reaction from the practice of homesteaders of breaking up the pastures by settling on land where they could not make a living. In some instances miles of fences are being removed and the ranges established where dry farming has been found to be unprofitable.

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COTTON WAREHOUSES APPEAL FOR LICENSES

There has been a marked increase in the demand for cotton warehouse licenses during the past year. In the administration of the United States warehouse act 242 such licenses were issued since July 1, 1920, by the Bureau of Markets, United States Department of Agriculture, and applications were received for 289. During the previous year 106 applications were received and 24 licenses issued. The increased interest in the licensing of cotton warehouses is thought by department specialists to be due largely to the following facts:

The Atlanta Federal Reserve Bank is actively encouraging warehousemen to become licensed and bonded under the United States warehouse act and a cooperative agreement has been entered into with the Georgia State Bureau of Markets, whereby the State bureau furnishes a free grading service to all licensed warehousemen who desire it. The governor of the Federal reserve bank at Dallas has recently taken an active interest in the act and is circularizing member banks in his district in advocacy of the Federal system of warehouses.

Very substantial reductions in the rates of fire insurance on licensed warehouses have been granted by the various rating bureaus in the South. In a majority of Southern States this reduction amounts to 25 per cent from the scheduled rates; in other Southern States the reduction ranges from 25 per cent on certain classes of warehouses to 10 per cent on others. Ten per cent is the minimum concession. The Federal Farm Loan Board has approved forms of receipts to be used under the regulations and steps have been taken to secure like approval from the Federal Reserve Board.

PRICES OF FARM CROPS BELOW PREWAR AVERAGE

The prices of six of the important crops on May 1 of this year were below the prewar average prices for that date, according to figures collected by the Bureau of Crop Estimates, United States Department of Agriculture. These crops are corn, oats, barley, flax, potatoes, and cotton. The report showed that the prices of the three grains—wheat, rye, and buckwheat—were above the prewar average prices. During April the average price of wheat declined from $1.50 to $1.23 per bushel. The report shows that in general the industrial crops, such as flax, cotton, and broom corn, are the most depressed in price, and that food crops, such as wheat, rye, potatoes, and apples, show relatively less decline.

The prices in various parts of the country vary, with South Dakota being the center of the low-price district, the May 1 report shows. The average price of wheat in that State was 90 cents per bushel, and in some counties it was as low as 70 cents. Corn was selling at an average price of 32 cents per bushel in South Dakota, while the average price for the United States was nearly 60 cents. The price of oats was 23 cents per bushel in South Dakota, the average for the United States being 36.8 cents. The report showed a big decline in the price of old potatoes, especially in Michigan, where the average was 29 cents a bushel, which was 20 cents below the average for the United States.

MEXICAN BEAN BEETLE MAY SPREAD WIDELY THIS YEAR

Indications that the Mexican bean beetle is likely to spread widely during the coming summer, possibly to northeastern Georgia and the Chattanooga district, and to cause great damage to crops in the present infested area in northern Alabama is reported to the Bureau of Entomology, United States Department of Agriculture, by one of its agents in the field. The insect pest is said to be appearing in such numbers in the district about Birmingham, Ala., as to indicate that 20 to 25 per cent successfully passed hibernation. Entomologists look upon this as a remarkably high overwintering percentage, which bodes ill for the crops this year.

Organization of work by the department for preventing the spread of the pest and discovering, if possible, some means for its control and eradication is nearing completion. A field station has been established at Birmingham, and specialists assigned to the various phases of the undertaking, including quarantine and regulatory work. The situation is much graver in view of the fact that the insect last year, in its new environment, began feeding upon a new food, cowpeas—an important southern crop—destroying as much as 30 to 35 per cent in some fields last autumn. The pest is said to have no known effective parasite or other natural enemies that would aid in keeping it under control, although larvæ and eggs are occasionally destroyed by natural enemies in the West.

The first egg this year is said to have hatched about the middle of March, due to the early spring and the mild winter. Continuous breeding until late autumn is looked for this year, with the probability of four or five generations instead of two or three, as is usual under normal conditions in the Rocky Mountain region, from which the insect has come.

RANCH HOMES BEAUTIFIED BY PLANTING ROSE BUSHES

In one of the dry-farming counties in New Mexico the women have shown their interest in improving the surroundings of their ranch homes by making home beautification a project in the county program of work. Through the assistance of the home demonstration agent, cooperating with the United States Department of Agriculture, these women, during 1920, bought, planted, and cared for 1,800 rose bushes which were planted in 21 home gardens. The roses include varieties which have never been tried before in that section of the country. They had a two years' growth in a desert region of California and so were accustomed to the type of soil to which they were transplanted.

Some of the varieties which made the best growth are the Red Radiance, Crimson Queen, Lady Battersea, Madam Cochet, Sunburst, Old Gold, Dorothy Perkins, and Gold of Ophir. The roses were planted in early April in well-fertilized soil and were protected from the spring winds until growth was well established. In the fall the bushes are protected by turning a small nail keg without a bottom over them and filling in with earth and manure. The beauty and fragrance of these roses tend to weld the people more closely to their ranch homes and thus make for more permanent agriculture.

Camphor Scale, a New Pest Threatening Citrus Fruits, Found in New Orleans

A new and serious insect pest that may prove a dire menace to the citrus fruit orchards and other cultures of the country unless its spread is checked, has made its appearance in New Orleans, where it now threatens to destroy many of the camphor trees used extensively for shade along the streets. Local authorities, it is said, are taking active steps to control the pest, and have asked the United States Department of Agriculture to give assistance through its Federal Horticultural Board and the Bureau of Entomology, which has been investigating the situation at first hand.

Show Partiality for Camphor Trees.

While the insect is found attacking more or less vigorously more than 100 kinds of plants, including citrus, the camphor trees appear to be most seriously injured by it, and for this reason the name camphor scale is applied to the pest. How it got into the United States is still unknown, but entomologists believe that it was introduced but little more than a year ago, from its rapid spread during the short time that its presence has been recognized. Thus far the pest has attacked chiefly ornamentals, owing to the character of plants in the infested area, which at present includes several blocks in the residential section of the city, where many of the camphor trees are beginning to show signs of injury, a few of the lower branches dying and a large number of leaves falling off. From its characteristics, however, the insect is believed to be an enemy of citrus trees, figs, and live oaks, as well as other plants of economic value.

This is said to be the first establishment of the camphor scale in this country. Hitherto it has been known to exist almost wholly in India, China, and Japan. Reported occurrences of its presence in the Philippines and Porto Rico are being inquired into as a result of the outbreak in New Orleans. It is described as an insect of semitropic climates and closely related to the San Jose scale, which made its appearance in this country between 45 and 50 years ago from China, and established itself as a very destructive insect pest in orchards. The opinion is expressed that the camphor scale would hardly go farther north than Virginia, on the Atlantic seaboard, if given a chance. But much apprehension is felt by specialists of the department concerning what valuable trees and plants it may attack if its spread is not arrested.

MARINES' SUPPLIES TO BE INSPECTED AT SIX PORTS

Fruits, vegetables, and butter for the Marine Corps are now being inspected by Bureau of Markets inspectors at New York, Boston, San Francisco, San Diego, Hampton Roads, and Philadelphia. For some time past the Bureau of Markets has inspected perishable food products for the Navy at these points, in accordance with a special arrangement between the Navy Department and the Department of Agriculture.

These inspections are made for the purpose of determining whether produce offered complies with the terms of the contracts. The inspectors have power to reject deliveries which do not come up to specifications or to suggest "cuts" to equal losses which will be sustained because of off-grade or improperly packed products.

It is expected that the heaviest work for the marines will be done in New York City, where potatoes and onions will be inspected for shipment to Haiti and San Domingo. These shipments amount to about 200,000 pounds of potatoes and 50,000 pounds of onions each month. The particular difficulty at this time of year is to get old stock that is not sprouting, as new potatoes and onions do not "hold up" well for long shipments into tropical countries.

BULLETIN GIVES CONTROL METHODS FOR FLAG SMUT

Methods for controlling flag smut, a destructive disease of wheat, are given in Farmers' Bulletin 1213, Flag Smut of Wheat and Its Control, issued for free distribution by the United States Department of Agriculture. The disease was discovered in 1919 near Granite City, Madison County, Ill., and in 1920 was found in 111 fields confined to 47 square miles.

Black stripes running lengthwise in the leaves and leaf sheaths are typical of flag smut. Diseased plants are stunted and rarely head. The disease is spread by spores carried on the seed, and by spores left in the field on infected plant material or on the ground, where they may be scattered in various ways, and infect wheat seedlings in the fall.

Treat with formaldehyde the infested grain as it comes from the thrasher. Burn infested straw. Sow disease-free seed on noninfested land. Treat with copper sulphate and lime the seed wheat to be sown in the infested area. Grow resistant varieties.

The bulletin may be had upon application to the Division of Publications, United States Department of Agriculture.

TICK-ERADICATION WORK MAKING RAPID PROGRESS

Reports from several of the Southern States, where cattle-fever ticks have hindered the progress of the live-stock industry, show that tick-eradication work this spring has made rapid progress. Work was begun early in the spring, for experience has shown that ticks killed during March will prevent the development of thousands of blood-sucking parasites later in the season. The eradication work in Georgia is especially noteworthy, say specialists of the United States Department of Agriculture.

In that State approximately half a million cattle were dipped during March and 833,434 in April, the work being done under the supervision of Federal, State, and county officials. This is a large number of cattle to be dipped, the specialists say, in a cotton-growing State, where the cattle industry has in the past been neglected on account of the presence of ticks. There are 3,291 dipping vats in operation in Georgia, in which the cattle are immersed every 14 days.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended May 28, 1921:

Handling and Transportation of Cantaloupes. Farmers' Bulletin 1145.

Effects of Nicotine Sulphate as an Ovicide and Larvicide on the Codling Moth and Three Other Insects. (Professional Paper.) Department Bulletin No. 938.

The Satin Moth: An Introduced Enemy of Poplars and Willows. Department Circular 167.

Unprotected Electric Lights. Department Circular 171.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention make your request definite by specifying the distinct class and number of publication desired. For example: Farmers' Bulletin 1145; Department No. 938; Department Circular 167.

Development of Cooperative Extension Work Marked by These Important Dates

Many inquiries come to the United States Department of Agriculture regarding the sequence of events in the development of the cooperative extension work in agriculture and home economics. The following are some of the more important dates in the history of this work as it has developed in cooperation with the department:

1904.—Farm demonstration work to combat the cotton-boll weevil was begun in Texas and Louisiana by Dr. Seaman A. Knapp with funds appropriated to the department for the purpose. The first agents appointed under this project covered several counties, sometimes as many as 10 or 15.

1906.—The first agent whose work was to be confined to a single county was appointed for Smith County, Tex., November 12. The first agents in the South were not called "county agents" but "special agents," in conformity with the department's practice at the time, although they were in fact county agents, as the name is now understood, in that their work was confined to a single county and was supported by Federal and local funds.

1907.—Boys' club work, organized in cooperation with the Department of Agriculture, began in Holmes County, Miss. The boys' club work in the South has from the first been associated with the county agent work.

1910.—Girls' club work began in three counties in Virginia and one in South Carolina. The demonstration work with women was an outgrowth of the girls' club work and has from the beginning been associated with it in the South. The first home demonstration agent for a single county, appointed by the Department of Agriculture, was for Aiken County, S. C., and was commissioned August 16.

1911.—The first county agent in the Northern and Western States was appointed for Broome County, N. Y., March 20.

1912.—Boys' and girls' club work in cooperation with the Department of Agriculture in the Northern and Western States was organized in Iowa and Indiana.

1914.—The Smith-Lever Act, permanently providing for Nation-wide cooperative extension work in agriculture and home economics became law May 8.

1916.—Cooperation of the department in home demonstration work with women in the Northern and Western States began with the appointment of a home demonstration agent for Erie County, N. Y., May 2.

1921.—In this year the personnel of the cooperative extension work had grown to include 2,338 persons engaged in county agent work, 938 in home demonstration work, and 346 in boys' and girls' club work, besides about 700 subject-matter specialists. The total fund available for the work is $16,830,000. Of the 2,800 agricultural counties in the country, about 2,000 have county agents and 800 have home demonstration agents.

BRANCH OFFICE FOR WAREHOUSE INFORMATION

A branch office for investigational warehouse work and to facilitate the licensing of warehouses for the storage of cotton, grain, and wool will be established June 1 at Dallas, Tex., by the Bureau of Markets, United States Department of Agriculture. This office will be under the direction of Mr. R. L. Newton.

Under the United States warehouse act such public warehouses may be licensed by the Secretary of Agriculture. The warehouses are bonded to the United States and are operated under a system of Government supervision similar to that provided through the operation of the national-bank system. The purpose of the act is to standardize warehousing practices and to provide a form of warehouse receipt which shall be uniform in terms and conditions, and that is reliable evidence of the quantity, kind, ownership, and other conditions of the product for which it is issued. Such receipts are acceptable as collateral for loans and have been approved and recommended by Federal reserve officials and others interested in financing warehoused cotton. Insurance companies have also lowered their fire insurance charges on cotton stored in Federally licensed warehouses as against warehouses that are not licensed.

APPEARANCE COUNTS IN MARKETING.

The selling value of fresh fruit and vegetable shipments is judged largely on appearance when received, say specialists of the Bureau of Markets, United States Department of Agriculture. Fruit should be well graded or assorted, packed in the most approved manner, and shipped when weather and market conditions seem most favorable.

Grading is one of the most important factors in preparation for the market. It is being studied by specialists of the bureau from every angle. Grades, which are optional, have been suggested for a number of commodities, and this work is being continued.

The marketing of the apple crop suggests the value of grading. If apples were not graded, the entire crop would have to be disposed of within four months. It is estimated that proper handling has extended the marketing period to seven or eight months. Investigation and experience have both shown that it only pays to ship the best produce. Stock which is not suitable for storage and shipment may be disposed of in the vicinity where grown, and the lowest quality should be diverted to by-products factories.

NEBRASKA TAKES FIRST PLACE IN LIVE-STOCK ENROLLMENT

During the first two weeks in May, Nebraska nosed Virginia out of first place, which it held for more than a year in the Federal-State campaign for live-stock improvement. But with 74 additional persons recently pledging themselves to use only purebred sires for all classes of live stock kept, Nebraska swelled its total of animals enrolled to 32,118. This figure, which is about 350 more than the total for Virginia, represents purebred sires, also females that are being bred to purebred sires as shown by the records of the United States Department of Agriculture. The standings of the two States on May 16 follow:

State.	Animals enrolled.	Poultry enrolled.
Nebraska	32,118	64,461
Virginia	31,765	64,013

Virginia, however, continues to lead all States in the number of persons who have pledged themselves to use only purebred sires. The number of such persons in Virginia is 1,130 as compared with 554 in Nebraska, which is second, but more animals per farm are kept in Nebraska, thus accounting for the larger enrollment of live stock.

Other States which have recently been noticeably active in live-stock improvement and in extension work for better sires, according to records of the department, are Ohio, Wisconsin, Louisiana, Minnesota, and Texas.

Milk Campaign Held in Heart of Dairy District Increases Consumption

Though the consumption of milk per capita in Madison, Wis.—the heart of a highly developed dairy district—was more than that of the average city, it was found desirable to conduct a milk campaign there. This campaign was held under the supervision of milk specialists of the United States Department of Agriculture cooperating with the Wisconsin College of Agriculture and local civic and welfare associations. To inform every man, woman, and child in Madison of the food value of milk was the goal set by the local committee. That this goal was attained, or nearly so, was conceded when it was found that at the end of the week's campaign more than 5,500 school children had been reached directly, nearly every important meeting had been addressed, and the message of milk for health had been carried to practically every resident in the city through newspaper notices, window exhibits, and posters.

The necessity for a milk campaign was brought about by two conditions: An average daily milk consumption which public health experts considered too low, though it was higher than the average, and a surplus of milk produced by dairy herds in the surrounding territory. While the average daily consumption, which was two-thirds of a pint per capita, ranks well with that of other cities, it was believed that the use of greater quantities of milk, especially by the growing children, would be a great aid in further reducing the undernourishment found among school children, and that in this work Madison, in the heart of the dairy industry, should take the lead.

Milk Feeding in Schools Shows Results.

A survey conducted in 15 schools before the campaign was held showed that of the 2,511 children, 1,827, or 72.7 per cent, were drinking milk, and that the average amount consumed per child was about 2.5 cups. It was also shown that 1,080 of them, or 43 per cent, were drinking tea or coffee, with an average daily consumption of 1.6 cups. When it came to eating butter, however, it was found that 91.6 per cent of the 2,511 children were getting this vital food.

Compared with results obtained in other cities, these figures show that the school children of Madison are above the average in milk consumption. But there is a reason for this. During the past five years a milk-feeding system was installed in the Madison schools, which has been proving the value of adequate milk consumption, judging from reports of the school principals.

At the beginning of the year the children are weighed and measured, and those who are underweight are put into nutrition classes. Here they are taught the value of proper foods, of cleanliness, and of ventilation in rooms, and other health habits. Milk is given to members of these classes every morning, and to others who desire it. Ten cents a week pays for a glass of milk every day. This has been made possible through the cooperation of the parents and teachers, and through it hundreds of undernourished children are being brought back to normal weight and mental alertness.

Cooperation a Prominent Feature.

The interest shown by city organizations, men's and women's clubs, merchants, manufacturers, and others was a feature of the campaign. From the beginning of milk week, which was started by a proclamation from the mayor, until the last address had been made, splendid cooperation was obtained. Press notices appeared daily in the newspapers, advertising space was contributed by merchants, window displays were placed in a number of store windows, and an opportunity was given the speakers to tell the story of milk and health at all meetings.

The work in the schools was particularly effective. In addition to the short talks given before the children by extension specialists from the college of agriculture, poster contests and essay contests were held to arouse interest in the food value of milk, and a children's play, The Milk Fairies, was put on by a number of the grade schools.

In one of the store windows in the downtown section, home-economics students from the University of Wisconsin served luncheon containing dairy dishes to four children each day. At another store gallons of buttermilk and sweet milk were served free to shoppers, and each one was given a leaflet of recipes for dairy dishes. In another window appeared displays of dairy dishes prepared by the high schools, competing for substantial prizes in the best dairy dish contest.

FEW REAL RUNTS ARE BORN.

Emphasizing that runty live stock are generally the result of inadequate feed, housing, and care, the editor of a farm paper in the Central West adds to the experiences which nearly 1,000 farmers have already reported to the United States Department of Agriculture on the subject of runt prevention.

"There are very few real runts born," he declares. "They may be a little undersized, perhaps a trifle weaker, and sometimes of inferior constitution, brought on by improper breeding systems. But poor housing, limited range, getting rooted away and cheated by the larger and huskier of the litter—these are the agencies by which most so-called runts are formed. Given proper care and feed until they get a start, the runts will prove money-makers."

These comments agree closely with the opinions of others who contributed their experiences in the matter to the department. Particular care needs to be given live stock at weaning time, since this is the time when the dams fail to give the nourishment required by the growing animal and when the young stock is learning to eat other feed.

VALUE OF MILK IN THE DIET SHOWN WITH RAT EXHIBIT

A striking exhibition of the value of milk in the diet has been prepared by the Dairy Division of the United States Department of Agriculture for use in educational milk campaigns. The exhibit consists of two stuffed and mounted rats, one a large-boned healthy specimen, the other an undersized weakling with skin clinging to its poorly developed bones.

The illustration compares an adequate diet containing all the food essentials with an inadequate, poorly chosen diet, lacking some of the food essentials. The large, well-developed healthy rat had its cereal diet supplemented with milk, and the advantage accruing is shown by the well-developed tissues, muscles, and bones, the smooth hair, the bright eyes, and the healthy color of the living rat. The protein of milk is capable of building muscular tissue. The mineral of the milk, especially lime, builds strong bones, and the food accessories (vitamines) of the milk insure growth and health.

The small rat was deprived of milk and other adequate sources of these necessary food constituents, hence the weak, gelatinous bones, thin muscles, lack of growth, and constant loss in weight and size. Both rats had wheat biscuits, but only one had milk with the biscuits.

These rats were chosen from two cages, each containing six rats. On March 24 each group weighed 485 grams. All rats were young and the same age. On May 4 both groups were again weighed. The six rats receiving milk had gained 542.5 grams. The others showed a loss of 17.1

grams each, or 102.7 grams for the lot of six.

This is not considered a scientific experiment, but a simple exhibit to show the effects of an inadequate diet, as proved by experimental research.

NEW ENTRANCE TO MISSOURI BOTANICAL GARDEN DEDICATED

(*Continued from page 1.*)

just read, shows very clearly that his motive was not to gather to himself credit for the thing he was doing, but to bring to the attention of young and old the goodness of God and the wonders He had wrought.

A High Sense of Citizenship.

"He had a keen sense of duty to his fellow man. He came here from a foreign land. In a comparatively short space of time he amassed a fortune. Unlike many who have had a similar life experience, he did not depart with his gain, but devoted his remaining years to good works. He had a high sense of citizenship. He gladly assumed that responsibility, which ought to be felt by every right-thinking citizen.

"Surely, even in the presence of some of them, I may be permitted to voice the general appreciation of the fine way in which the men chosen have carried out Mr. Shaw's purposes. Too often enterprises of this sort left in trust are carried on in a purely perfunctory way and without that understanding and heart interest so necessary to the full discharge of the duty imposed. Too often, as the original trustees pass away, interest lags and the purposes of the donor are unfulfilled or thwarted.

"Not so in this case. On the contrary, those who have been charged with this duty and who have been invited to share a high privilege seem to have entered fully into the desires and ambitions and ideals of Henry Shaw. Men of thought and men of vision have been at work here. There has been a consistent enlargement of the scope of the work carried on, with the thought that in addition to being a place of beauty and enjoyment these gardens should contribute more and more largely to the educational development in this country and to our scientific knowledge of plant life.

Gardens Valuable for Educational Purposes.

"The gathering of representative groups of healthy plants, so arranged as to be most attractive and easy to recognize and remember, has added much to the value of these gardens for educational purposes. The technical study of plants, especially in the field of plant physiology, and the opportunity given here for plant students to pursue their investigations have attracted most favorable comment from scientists interested in plant life. As head, for the time being, of a department which numbers on its staff many of the most eminent scientists of the world, I am glad to acknowledge the great value of this work.

"If, however, I should undertake to place relative values upon the various activities which are being carried on here, and measure them in percentages set down in orderly fashion, I should place, first, the subtle influence which these gardens exert upon the lives and character of those who come for study and research and, more especially, for the pure joy of living for a time among the beautiful plants the good God has given His people.

"Wise parents, as they have opportunity, bring their children in contact with nature in her varied forms. They take them to the mountains, that they may see nature in her more rugged aspects; that they may see with their own eyes evidences of the mighty forces which were at work when the land was shaped. They take them to the rivers and to the sea, that they may see God's hand upon the waters; now in repose, again lashed into fury by the winds. They take them to the fields and to the forests, that they may have some understanding of our dependence on the soil. They bring them to places such as this, where plants of almost endless variety of form and color, fragrance, and beauty appeal to the finer emotions and thus develop a love of the gentle and beautiful which influences thought and action throughout life, and which adds largely to the capacity for happy living.

Life Is Made Up of Cycles.

"Men who have studied into such matters tell us that sufficient records remain to prove the existence of some six or eight great civilizations prior to the one in which we are now living. They tell us, further, that each of these great civilizations was preceded and followed by periods of darkness; that they went through certain fairly well-revealed stages, the last being the period of wealth. They tell us that as the period of wealth develops there comes the fevered pursuit of artificial pleasures, the rush to the cities, the desertion of the open country, and the consequent breaking down of character and the lapse once more into the period of darkness and despair.

"If this, which we like to think of as the most advanced of all civilizations, is to escape the fate of those that have long since been sifted over by the sands of oblivion, we must profit by the experience of those who have gone before. We must keep our people close to nature and to nature's God, for in no other way can we implant in the young those great principles which make for clear thinking and right living, without which an enduring civilization is not possible. In such a task beauty spots like this are invaluable aids.

"Rich is the city which has at its door a place for inspiration and study freely open to young and old, rich and poor, great and small; freely open to all who will come. And rich is a city and a Nation which produces citizens who are willing to give of their time and their money to perpetuate institutions such as this."

SEED CORN MAGGOT ATTACKS EARLY POTATOES

A very severe outbreak of the seed-corn maggot, accompanied by a fusarium rot, in seed potatoes is prevalent in the Atlantic Coastal Plain, extending from North Carolina to the Eastern Shore of Maryland and practically covering the important early potato regions in these States, according to reports to the Bureau of Entomology, United States Department of Agriculture. Specialists of the Bureau of Plant Industry look upon the situation as a very complicated one, saying that it is evident that while part of the decay followed the damage done by the seed corn maggot a good deal of the damage is traceable to other initial causes, including especially the unusual seasonal conditions that prevailed during the early part of March.

The relative amount of insect or fungus injury varied in different instances. In some the insect damage predominated, while in others it was absent, and fungi seemed to be entirely responsible for the decay. Among the secondary factors that aggravated the conditions were the planting of seed pieces directly on the fertilizer, the fact that seed was sometimes cut and kept in barrels for several days to two weeks before planting, and the use of home-stored northern seed as compared with cold-stored northern seed.

Reports from New Jersey say that the maggot has appeared in large numbers over the southern third of the State and has done damage to pea and bean seed, to lettuce plants, and in some instances to potatoes. The rapid advance of the destruction from North Carolina, through Virginia and Maryland, is thought to indicate the possibility of damage in the early-trucking section of Long Island.

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SPRAY THOROUGHLY TO BRING FRUIT TO PERFECT MATURITY

Particular Attention Should Be Directed to Late Spraying, Say Specialists.

Use of Concentrated Lime-Sulphur Solution, Arsenate of Lead, and Bordeaux Mixture Advised in Battle Against Enemies of Tree Fruits.

With the scarcity of fruits in Eastern States, due to three unusual late spring freezes, the United States Department of Agriculture urges all growers who have any trees, bushes, or vines promising a yield to do everything in their power to bring the entire crop to marketing condition. The department recommends particular attention to late spraying. Many growers who are careful about the early season applications neglect the matter when other summer work comes on, but a few hours work spent on fruit this year is likely to pay good returns.

Repeat the Calyx Spray.

The calyxes of apple blossoms closed several weeks ago. Nevertheless the repetition of concentrated lime-sulphur solution spray at the rate of 1½ gallons to 50 gallons of water and 1 pound of arsenate of lead powder or 2 pounds of the paste will be effective against apple scab and leaf spot, plum curculio, cankerworms, and tent caterpillar.

In spraying for the codling moth after the petals fall, the aim is to drive into the calyx end of each little apple a small quantity of poison, and to accomplish this, painstaking work is necessary. Failure to do thorough spraying at this time for the codling moth can only be partly remedied by the three-weeks and subsequent applications. Eight to nine weeks after the petals have fallen it is advisable to spray with Bordeaux mixture of 4-4-50 strength, together with an arsenical. This is the first application for the second brood of the codling moth. In ordinary years this application is effective against bitter rot, but fruit is reported killed practically throughout the region where bitter rot prevails.

Similar spray methods to those recommended for apples will check codling moth on pears. An arsenical spray in June will kill the destructive pear slug. With peaches considerable good can still be done by spraying. Five weeks before the fruit is due to ripen the self-boiled lime-sulphur mixture should be used. Japanese plums, which have the same ripening season, should receive the same treatment as peaches. Soap should be added to enable the spray to stick to the smooth plum fruits.

DESTROY ROADSIDE WEEDS

Because—

1. They act as centers of weed infestation for adjoining fields.
2. They may be carried for many miles by passing vehicles and animals.
3. They harbor harmful insects and plant diseases.
4. They create insanitary conditions.
5. They are unsightly.

Methods for destroying roadside weeds, approved by specialists of the United States Department of Agriculture, are:

By—

1. Mowing twice a year while they are in full bloom, usually in June and August.
2. Utilizing the roadsides for growing hay.
3. Grazing with tethered animals.
4. Converting weedy roadsides into lawns.

GRADE ALL ROADSIDES SO THE WEEDS CAN BE CONTROLLED.

SACALINE, OR EUREKA CLOVER, RECEIVES UNWARRANTED FAME

Many inquiries about a plant that goes by the names of Sacaline, Eureka clover, or East Indian Giant clover are received every year by the United States Department of Agriculture. Many of these inquiries, especially some that come from advertising that has been done on the Pacific coast, show that extravagant claims have been made for the plant, and correspondents have entertained high hopes that all their forage problems might be solved by getting this plant.

(*Continued on page 6.*)

TOBACCO BLUE-MOLD DISEASE NOT ALARMINGLY PREVALENT

Not to Exceed 5 Per Cent of Shade-Grown Crop in Infected Area Affected.

Reports That Disease Has Appeared in Connecticut, North Carolina, and Other Districts Are Without Foundation, so Far as Department Has Information.

Statements reported to have been circulated in the press and in the tobacco trade to the effect that the Florida-Georgia shade tobacco industry has been destroyed by the tobacco blue-mold disease, which recently appeared in that region, are pronounced by the United States Department of Agriculture, in a statement issued to-day, to be entirely without foundation.

Conditions Adverse to Spread of Disease.

The disease, which, so far as known, was first observed on commercial plantings in this country early this season in the Gadsden-Decatur district and aroused much apprehension among the growers there at that time, has been under investigation by specialists of the Bureau of Plant Industry since late in March of the present year. The infection in the seed beds was distinctly threatening and the same condition existed in a considerable number of the shade fields for several weeks. Since about the middle of April growing conditions in the region have been favorable for the development of the crop and adverse to the spread of the disease, so that its attacks have been substantially confined to the lower or sand leaves and are estimated at not to exceed 5 per cent of the crop in the infected areas. Advices to May 27 indicate the crop is making rapid, luxuriant growth, showing little insect injury, with little probability of spread of blue mold later in the season.

The department is informed that statements have been made to the effect that this disease will spread on tobacco in storage and that even leaves which may

mature without visible infection would be unsuitable for use. There is no foundation for such statements as the disease does not spread on harvested and cured tobacco. Clean leaves are in all respects normal and suitable for wrapper use.

Reports that the blue-mold disease has appeared in Connecticut, North Carolina, or other districts are not true, so far as the department has information, nor has the disease appeared in the Madison or Dade City districts of Florida, nor in southern Alabama.

INDUCE FARMERS TO GROW PURPLE VETCH FOR SEED

Due largely to the intermediary efforts of the United States Department of Agriculture, 2,400 acres of purple vetch is reported as being grown this year for seed in northwestern California for use in the orchards of the southern part of the State, where it has proven a superior green-manure crop. The superiority of purple vetch in California for green manure lies in the fact that it makes more growth during the winter months and can be turned under earlier than other legume crops.

Purple vetch was first brought to this country from Italy in 1899 and its advantages have been appreciated for a number of years, but it was not possible to introduce it extensively because of scarcity of seed. In the region where it was most valuable it has not been feasible to raise purple vetch seed in large quantities because of climatic conditions. In the North, on the other hand, the seed can be grown successfully, but there the purple vetch is not in as great favor for forage as common vetch, which is hardier and has become established in popularity.

To make a bridge between the two geographically distant localities has been the work of a number of years on the part of the department experts. It was first necessary to demonstrate the value of purple vetch in the South, and afterwards to induce northern farmers to substitute it to some extent for their customary crops. This latter was difficult, because purple vetch was not quoted on the market, and also because, where a sale was effected, farmers were tempted to sell their entire stock, reserving no seed to maintain or extend the acreage.

The assistance of a large California fruit growers' association was enlisted, and last year 500 acres were grown under guarantee, a large portion of the yield being kept for seed. This year northwestern California and Oregon farmers will receive 14½ cents a pound for purple vetch seed, which should give them from $150 to $200 per acre in addition to the straw. From now on it is expected sufficient seed will be available for all needs.

Porto Rican Yams, High in Food Value, Could Be Shipped With Little Fear of Loss

Porto Rican yams might be enjoyed by the people of the United States if some attention were paid to shipping.

The yam is a common garden crop in Porto Rico and is one of the most important and lowest-priced food products of the island, says Bulletin 27 of the Porto Rico Agricultural Experiment Station. This bulletin, which is entitled "Yam Culture in Porto Rico," discusses the commonly practiced methods of growing yams and summarizes some of the experimental work undertaken by the station to improve these methods. The yam referred to in this bulletin is the true yam and not the so-called yam of the Southern States, which is a sweet potato.

Few Enemies and Diseases.

The yam is widely grown in Porto Rico, because it is well adapted to most soils of the island and is almost entirely free from destructive insect pests and plant diseases. Practically the entire production is for home use, but, according to the bulletin, if the crop were properly handled it might be shipped to other markets with little fear of loss or deterioration.

The better varieties of yams have a high food value, due mainly to their very large starch content. There are many ways in which it can be prepared for the table, and its low cost should serve greatly to stimulate extension of its use. The introduction of new and improved varieties and methods of culture results in a product superior to the yams commonly grown, and which it is believed will find a more ready market. Porto Rican planters have, however, been so certain of a fair yield, as a rule, that not much effort has heretofore been made to improve varieties or methods of culture.

As regards methods of culture, the bulletin points out that a well-drained soil of good mechanical condition is a prime requisite. For this reason it is recommended that ridges of well-drained soil and vegetable matter should be made sufficiently large at the time of planting to enable roots to make a normal growth above the water level of the soil and above the firm subsoil. Plants should be placed from 1 to 2 feet apart in these ridges, according to conditions peculiar to the root growth of each variety.

Avoid Bruising the Roots.

Either entire roots or parts of roots may be planted, although the crown or upper section has been found to give the most satisfaction at the experiment station. Dipping in Bordeaux mixture is an effective means of preventing decay of roots cut in pieces for seed. In the station experiments applications of fertilizers did not result in sufficient increase in the crop to warrant their recommendation. Tests in pruning the vines resulted in each case in a marked decrease in production. Yields were low also where supports had not been provided for the vines. In harvesting yams care should be taken to avoid bruising the roots, because injured roots are usually attacked by diseases and then decay.

Guinea is the most desirable variety on account of its heavy yield, its high food value, and its pleasant flavor. The variety called Mapuey morado sells at a higher price than other yams, but its yield is usually low. Among the lately introduced varieties recommended for general planting the one known as Potato, which was introduced from Africa, and a variety of the species *Dioscorea alata*, from New Guinea, produce heavy crops of roots having a high food value and palatable flavor.

COW FEED FROM SAWDUST NOW.

Hydrolized sawdust as a part of a ration for cows is apparently giving satisfactory results in Wisconsin. The Forest Service of the United States Department of Agriculture reports that cows at the Agricultural College of that State are doing as well on a ration consisting of one-third sawdust as they did when their feed was only one-fourth wood meal. That is to say, they are keeping up their weight and their milk production and show no ill effects from the diet.

The Bureau of Animal Industry is considering the proposal of the Forest Service laboratory to start feeding trials with dairy animals in which the wood product will form a part of the ration and the tests will extend for an entire year at least. The hydrolized-wood feed for these cows will be made at the laboratory. So far all the stock feed has been made from white-pine sawdust. Other soft woods, particularly the western species, will be tried in the future.

Pacific Coast Growers Seek New Markets for Surplus Grain Hay Via Panama Canal

Although very little is known in other parts of the country concerning its value and use, grain hay is grown extensively west of the Rocky Mountains, where it forms about one-half of the hay marketed; and dealers there are seeking new markets for the product as an outlet for surpluses that frequently exist in their producing territories. The great difficulty encountered in this, according to the Bureau of Markets, United States Department of Agriculture, is that consumers in eastern markets are not familiar with the feeding qualities of grain hay, and therefore hesitate to try it.

Movement of the product eastward by rail is found to be impracticable because of high freight rates over the mountains, but water rates by way of the Panama Canal at $12 a ton from San Francisco to New York make it possible to offer the hay in eastern and southeastern coast markets in competition with timothy.

The principal kinds of grain hay are oats, barley, and wheat hay, each being preferred in certain sections of the western coast country. Oat hay seems to have the preference among consumers in southern California, with barley hay a close second. In the San Francisco market wheat hay is preferred, with oat and barley, respectively, next in demand.

Climatic Conditions Govern Production.

The production of grain hay for market appears to have been more the result of climatic conditions than of any other agency. In many sections of the Pacific coast country the hot, dry winds that frequently prevail make the raising of wheat, oats, or barley as a grain crop uncertain. It frequently happens that the hot winds will occur just when the grain is in the dough and will cause it to shrivel, thus producing a very poor quality of grain. When the crop is cut for hay, cutting is delayed until the grain is fully formed or as fully formed as possible without loss of leaves, to produce the best quality of forage.

As with other hays, the time of cutting grain hay is also very important. If the hay is cut too early, the grain will not be sufficiently matured to give the hay the greatest feed value, and if cut too late the stems will become too fibrous and the hay will also be of poor color. The hay which is considered of the highest quality is that which has good bright greenish color yet has sufficiently matured to have high feeding value, as indicated by the grain contained in the hay.

The lack of rains during the harvesting period makes it possible to harvest and bale the hay under almost ideal conditions. Rains sometimes damage the hay while it is curing sufficiently to be baled, but this is the exception.

Large Bales Preferred.

Most of the hay is baled into large 5-wire bales, although there are a few of the 3-wire 17 by 22 inch bales made in some sections.

The grain hay is used principally for feeding horses and stock cattle, although considerable is used by the dairies located in the producing sections. Alfalfa, which is also extensively grown, is preferred by dairymen. It is claimed that stock will fatten upon good grain hay without an additional ration of grain. Timothy hay is practically unknown, and it is said that stock that have always been fed grain hay will not eat timothy when offered to them.

San Francisco and Los Angeles are probably the largest grain hay markets, and receipts, ranging from 50 to 100 cars per week, are usually about equally divided between grain hay and alfalfa. Most of the hay is shipped to market by rail, but considerable hay from the Sacramento River Valley is forwarded to San Francisco by boat. Several firms in this market own their own boats, which have a capacity of 75 to 100 tons, which they send up the river to producing sections and transport the hay direct from the large ranches to the city market.

Some Grain Hay Is Exported.

Most of the hay received at the markets is used locally, but some is exported. This hay goes principally upon Government contracts to the Philippines and Hawaii and must be recompressed or double compressed for exporting. The method of recompressing the hay differs somewhat from that used in the eastern and central-western markets during the war for recompressing timothy hay for shipment to Europe.

Instead of placing whole bales in the presses and reducing their volume, or of pressing two or more bales into one more compact, the hay is taken from the original bale and run over a revolving cylinder, which pulls it apart. This hay is then fed into the press, which is usually a heavy type perpetual press making a bale about 14 by 18 inches. By using cross-head bale ties 8 or 9 feet in length the bales are of even length and contain about 6 cubic feet. A ton of hay is pressed into a space of from 50 to 70 cubic feet.

By this method of baling hay can be partially conditioned and, to a certain extent, a desired grade may be produced, for by opening a number of bales at the same time and feeding a small portion of each of them alternately into the cylinder already mentioned, damp and dry hay, or ripe and green hay, can be fed into the press together in any desired proportion. In the case of the damp and dry hay, the dry hay will absorb some of the moisture from the damp hay and thus probably put the entire lot in better condition. In the case of the ripe and green hay, a grade might be produced which apparently would be better than either of the grades entering into it, as the grain in the riper hay would furnish the weight, while the greener hay would furnish the color. It is doubtful, however, whether the grade produced could be of a higher quality than the hay of which it is composed, even though it conformed with the specifications of a higher grade as described in the present commercial grades.

SHORT CROP OF MAPLE SUGAR AND SIRUP.

Fewer maple trees were tapped last spring than in any one of the last five years, and only about half as much sugar was made as during any of the preceding four years and about three-fifths as much sirup, owing to the unfavorable weather, says the Bureau of Crop Estimates, United States Department of Agriculture.

The average producer's price of maple sugar in the middle of April was 25.7 cents per pound, compared with 37 cents in the same month in 1920, and 26.9 cents in 1919, although above the 22.5 cents of 1918 and 16.3 cents of 1917. Maple sirup had the average price of $2.21 per gallon in April, above which was the price of $2.92 in 1920 and below which were the prices of the preceding three years.

BEES ARE THRIVING.

Bees came through the winter in almost perfect condition and with hardly more than two-thirds of the usual loss of colonies during the winter. Partly due to this and partly to the progress of apiculture in 1920, the number of colonies of bees this spring is estimated by the Bureau of Crops Estimates, United States Department of Agriculture, as 7.4 per cent above the number of a year ago at the same season. Among the States in which notable advance has been made in number of colonies are nearly all of the North Atlantic States, Maryland, Ohio, Michigan, Wisconsin, South Dakota, Louisiana, and Montana.

Weekly News Letter

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ENORMOUS CROP TONNAGE HAULED ON COUNTRY ROADS

Eleven principal crops afforded 86,500,000 tons for hauling on country roads in the yearly average of 1915 to 1919, or 27 tons per 100 acres harvested. Among the results of computations made by the Bureau of Crop Estimates, United States Department of Agriculture, Illinois is far in the lead of States in providing crop haulage, and its fraction of the United States total is one-tenth, or 8,855,000 tons. Iowa has 6,590,000 tons, and Kansas somewhat more than one-half of the Illinois tonnage hauled, with 4,862,000 tons. Following in order are Nebraska, Indiana, Ohio, and Texas, with 4,050,000 tons in the last-named State. The difference between high and low costs of hauling due to poor or good condition of roads reaches a large figure in the hauling of this great tonnage, or a large fraction thereof.

ESTABLISH NEW LOW RECORD FOR FARM ANIMAL MORTALITY

Nearly 7,000,000 domestic animals were lost from disease and exposure on the farms of the United States during the year ending with April, 1921, as the Bureau of Crop Estimates, United States Department of Agriculture, has recently estimated, and their value was about $150,000,000. These losses comprise about 303,000 horses and mules, 585,000 lambs, 1,223,000 mature sheep, 1,743,000 cattle, and 2,946,000 swine.

While these numbers are large from any point of view, yet they represent low rates of mortality. The rate for horses and mules, 1.47 per cent, has been exceeded for many years, and the same statement applies to 1.70 per cent loss of cattle from disease and 0.93 per cent from exposure, to 1.48 per cent loss of sheep from exposure, to 4.62 per cent loss of lambs from disease and exposure, and to 4.42 per cent loss of swine from disease, in this case with the exception of two recent lower years. Sheep diseases were fatal about as usual. A mild winter was favorable to the making of this low record of mortality. It is also true that animal mortality from diseases is declining as the various public agencies, veterinarians, and farmers better understand how to combat them.

WILL TRY PONY BLIMPS FOR FIGHTING FOREST FIRES

Various kinds of gas-propelled vehicles have been used at one time or another in the Forest Service, United States Department of Agriculture, by patrolmen and fire-fighting crews. Track speeders, motor cycles, motor boats, automobiles, trucks, and airplanes have all been tried, and now it is proposed to use a small dirigible, technically called a pony blimp. One of the big companies making tires and other rubber goods in California specifies these advantages for the pony blimps: A cruising range of 8 hours; speed of 1 to 45 or 50 miles an hour; ability to buck stiff winds, making 10 miles an hour against a 30-mile gale; control of elevation, flying within 50 feet or less of the earth as well as at several thousand feet altitude; ability to land on very small plot of ground; maneuvering readily in close quarters; can be held nearly stationary close to the earth; discharges passengers on rope ladder while machine hovers over a selected spot; can be tied to a fixed object while crew fights fire; can be used for transporting supplies; low cost of operation.

The blimps will be equipped with 75-horsepower Lawrence motors and will carry three or four persons comfortably. The blimps will cost about $12,000 and the operating cost is estimated at about 24 cents a mile, including total maintenance of the ship for 24 hours, or an actual flying-time cost of 2½ cents per mile.

VIRGIN ISLANDS PRODUCE FINE QUALITY OF COTTON

Cotton raising has become one of the principal industries of the Virgin Islands, Uncle Sam's newest territorial possession, according to Bulletin No. 1, Sea Island Cotton in St. Croix, of the Virgin Islands Agricultural Experiment Station, just issued by the United States Department of Agriculture.

Sea-island cotton, the much-prized, long-staple variety which has been rendered almost extinct in continental United States by the boll weevil, is the basis of the Virgin Island industry. The area devoted to it, while as yet small, produced an average yield of 1,000 pounds of seed cotton to the acre in 1919 and 1920. One of the plats at the Government experiment station produced at the rate of 4,450 pounds of seed cotton.

Since the establishment of the experiment station in 1911 the aim has been to secure varieties of cotton resistant or immune to the blister mite, and which also possess a heavy bearing quality with extra long, fine lint. A series of experiments has been undertaken in crossing sea island with other varieties in the hope of getting a more remunerative type. Some of these hybrids show an even heavier yield than pure sea island while retaining the desirable characteristics of the latter and the resistant qualities of the other variety.

MANY FARMERS INTERESTED IN STANDARD-BRED POULTRY

In the absence of census data on the quality of farm poultry, information being received by the United States Department of Agriculture in connection with the "Better Sires—Better Stock" movement is believed to be of interest to poultrymen. For instance, of 75 livestock owners in Webster County, Nebr., who in one day enrolled in the better-sires drive, 65 reported standard-bred fowls. The flocks averaged 94 birds. The principal breeds reported are, in the order stated, Plymouth Rocks, Leghorns, Rhode Island Reds, Orpingtons, and Wyandottes. Barred Plymouth Rocks were more numerous than other varieties in the breed. Of the Leghorns the White Leghorns were raised in largest numbers, while of the Wyandottes the white variety was somewhat more popular than the Silver Laced Wyandottes, which were second. Buff Orpingtons were the only variety of that breed reported.

The facts stated are believed to show interest in the keeping of well-bred poultry, especially since the Better Sires—Better Stock blanks merely call for the number of poultry kept; and in all cases the live-stock owners volunteered the facts about breeds and varieties. It is also noteworthy that whereas the better-sires drive is aimed chiefly at the improvement of breeding males, in the case of poultry a large majority of females likewise are standard bred.

Nicotine Sulphate for Codling Moth Less Efficient Than Arsenate of Lead

Nicotine sulphate is not as efficient in the control of the codling moth as powdered arsenate of lead, it has been shown in experiments conducted, by entomologists of the United States Department of Agriculture. For several years nicotine and its compounds have been used against certain soft-bodied insects as contact insecticides, and within the past few years the question has been raised concerning the effects of nicotine sulphate upon the eggs and early instars of other insects which are commonly controlled by other means. To obtain reliable information on this subject the department entomologists conducted a series of experiments both in the laboratory and field, a report of which has just been published in Department Bulletin 938.

Not Effective in Killing Eggs.

In the laboratory tests it was found that nicotine sulphate, with one exception, was inefficient against the eggs of the silkworm moth, codling moth, tussock moth, and potato beetle. The eggs sprayed with it were variously affected depending upon the strength of spray solution used, on the age of the eggs tested, and whether or not the solution contained soap. Upon the eggs of three of the species of insects used there was practically no difference in the effects between solutions containing soap and those without soap, although those with soap were much more effective upon the eggs of the tussock moth.

Comparing the effects of the spray solution, 1:800, the strongest of the economic solutions used, the percentages of eggs sprayed with it that failed to hatch are as follows: 99 per cent of the freshly laid eggs of the silkworm moth, but only 75 per cent of the older eggs of the same insect; about 20 per cent of the codling-moth eggs on apple-tree foliage; 75 per cent of the tussock-moth eggs (1 to 3 days old); and about 12 per cent of those of the same insect which had been collected in the field; and practically none of the potato beetle eggs.

The field work was conducted by the department entomologists during the season of 1917 in three important apple regions of the United States—the lake region of Benton Harbor, Mich., the mountainous region of Grand Junction, Colo., and the semiarid region at Roswell, N. Mex. The experiments show that nicotine sulphate 1:800 with soap gave a fair degree of control for the codling moth at Benton Harbor and Roswell; but that it was not as effective as 1 pound of powdered arsenate of lead to 50 gallons of water. It was found also that there was no practical advantage in combining arsenate of lead and nicotine sulphate in sprays designed to control the codling moth. At Grand Junction, where the infestation was much heavier, nicotine sulphate 1:800 without soap was inefficient against the codling moth.

SHOWS STEADY PROGRESS MADE IN BETTER-SIRES CAMPAIGN

Recent figures on the enrollment of animals and poultry in the Better Sires—Better Stock campaign, which is being supervised by the United States Department of Agriculture, show that since the movement was started in October, 1919, there have been 174,194 animals and 264,945 chickens or other poultry enrolled. During this time 3,576 certificates of membership in the campaign have been issued by the department. In order to secure a certificate, a stock breeder or poultryman must fill out a blank, which is supplied by the Bureau of Animal Industry, stating that he will use only purebred sires. A report recently issued by the department shows that 45 States and two possessions—Guam and Porto Rico—have stock breeders or poultrymen enrolled in the campaign. Virginia leads in the movement with 1,130 certificates issued, but Nebraska has the largest number of live stock enrolled.

OLD THEORIES DISPROVEN ON DIGESTIBILITY OF STARCH

It has been generally believed that raw starch was harmful, and that all starchy foods should be subjected to thorough cooking to be digested properly by the human body. Cornstarch and similar puddings, quickly made, were tabooed by those who held to the belief that raw starch could not be digested. The idea that raw starch is not digestible has been proven erroneous, at least in the case of healthy adults. In a series of experiments conducted by the Office of Home Economics, United States Department of Agriculture, it has been found that cornstarch, wheat starch, and rice starch were all digested completely when eaten in frozen pudding in which they constituted as much as 20% of the entire dish. Raw potato starch later in the same kind of pudding was found to be less digestible, giving an average of 78.2% digestibility, and similar results were obtained with other tuber and root starches. The textbook statement that raw starch is not digestible will now have to be changed, and persons who have feared a harmful effect from the presence of raw starch in foods may allay all apprehension.

CONDUCT MILK CAMPAIGNS IN MANY COMMUNITIES

Selling the milk habit to folks is the way some people refer to the educational milk campaigns which are being held under the supervision of dairy specialists of the United States Department of Agriculture. These campaigns are cooperative enterprises, the department specialists joining with the State extension forces and local officials and leaders in showing the value of milk as a health food. Thus far 17 States have cooperated in conducting campaigns in 40 cities and more than 100 rural communities.

Before a milk-consumption campaign is held in a community a preliminary survey is conducted to make sure that the milk supply is clean and wholesome, that there is a sufficient amount to take care of any increased consumption resulting from the campaign, and that the local authorities are willing to cooperate in the movement. It is also made certain that a condition of undernourishment exists among growing children or that children are consuming too little milk. By following this plan, the department specialists say, every milk campaign thus far conducted has been successful and has resulted in a more than temporary increase in the consumption of milk.

AN AIRPLANE FIRE PATROL.

An agreement has been signed by the Forest Service of the United States Department of Agriculture and the Red River Lumber Co., in California, by which the entire fire protection of about 800,000 acres of timberland owned by the company will be undertaken by the Government. The cost will be about $12,000 a year. This means that every precaution known to the Forest Service, both for preventing and fighting forest fire, will be used. Airplanes will patrol the timberlands and every forest ranger will be a fire warden.

The timberland included in the 800,000 acres is in what is called the Lassen National Forest, in Lassen County, Calif., near Susanville.

Strenuous Effort Being Made to Drive the Deadly Cattle Tick Out of Georgia

Cattle ticks are fighting a losing battle in Georgia this year. The attempted invasion is being effectively suppressed by the cooperative efforts of Federal, State, and county employees, working with the stock raisers. The famous battle cry, "They shall not pass!" has been revised in the fight with the blood-sucking parasites to "They shall not live!" for a united effort is being made to eliminate the last tick in a number of counties in the State.

Dip the Cattle Every Two Weeks.

There are in operation in Georgia 3,291 dipping vats, in which cattle are immersed every 14 days. Dipping began early in the spring, the time when the most effective results in tick eradication are obtained. During March approximately half a million cattle splashed through the dipping vats in the State. The April reports show that 833,434 cattle were dipped under Federal, State, and county supervision. This is a very good record, say specialists of the United States Department of Agriculture, when it is considered that Georgia is essentially a cotton-growing State and that the cattle industry has been neglected on account of the handicaps presented by the presence of ticks.

Now all cattle that have been dipped in Georgia are marked with paint, and this plan has given very satisfactory results in getting to the dipping vats animals pastured on the open range that might otherwise miss regular dipping. The use of range riders, whose duty it is to search for and dip cattle that are not marked, was considerably increased during April.

In Georgia, as in all other Southern States where the fight against cattle ticks has been waged, there is always more or less opposition to the tick-eradication movement. Recently a meeting was held in one Georgia town for the purpose of protesting against the further dipping of cattle in the county. A progressive farmer who had experienced unsatisfactory results in raising cattle under tick conditions read a notice of this meeting of protest and immediately wrote a letter to the president of the bank in the town in which the meeting was held. In this letter he said:

Practical Farmer Advises General Dipping.

"Noticing in the newspapers that your people meet opposition in tick eradication, I desire to express my actual experience on this line. Before the discovery that the cattle tick was the source of infection, the only cause of bovine fever, I brought many registered Jersey dairy cattle to Putnam County, middle Georgia, and met with discouraging losses. Later I immunized the northern cattle by transfusing blood from cows carrying ticks to the susceptible northern-bred cattle.

"While the treated cattle did not subsequently die of cattle fever, the process proved harmful to the growth and development of the animal whose life was saved. When the history of the deadly tick became fully known, tick eradication justly took precedence over any treatment. Its ease of accomplishment, its economy, and beneficial results that followed all emphasized its necessity to any community that desires to raise cattle.

"In our part of the State no man, no matter how unreasoning and bitter his opposition to tick eradication when we needed his moral support, can now be found who does not fully approve the work. No argument should carry more weight than the full indorsement and approval of opponents when they see the whole truth, and change from opposition to advocacy.

"This week I sold a dairy cow for $250 for which I could not have obtained half the price if my county still harbored ticks. I would not raise cattle, nor attempt to run a dairy from the milk of cows poisoned with fever germs and robbed by vampire parasites.

"Surely we who have bred cattle under tick infestation, and later after tick eradication, are entitled as missionaries to endeavor to benefit others who have never been without the disadvantage of the pest."

Western Cabbage Flea-Beetle Feeds Upon Many Farm Crops

Evidently the western cabbage flea-beetle was not hatched to die by poison—at least by sprays of arsenicals found so effective against many crop insect pests. It may be driven away, however, by poisonous applications, and herein lies the methods of control discovered by specialists of the Bureau of Entomology, United States Department of Agriculture, whose experiments in combating the pest are described in Department Bulletin 902, The Western Cabbage Flea-Beetle, recently published. This insect is by no means confined to cabbage, but frequently does serious injury to turnips, radishes, mustard, kale, and other cole crops, to sugar beets, table beets, and under exceptional conditions to beans and peas.

The beetles, it is said, are dainty in their feeding habits, carefully avoiding foliage that has been sprayed, and attacking either unsprayed parts or flying to other plants. Repellents such as tobacco dust were found to be the most effective of those tested, and of the arsenicals, heavy applications of arsenate of lead gave the most satisfactory results.

A formula that gave excellent results was arsenate of lead paste, 1 pound; fish-oil soap, as a sticker, 1 pound; and water, 10 gallons. Half of this weight of powdered lead arsenate, or 2½ pounds in 50 gallons of water, is equally effective, with a corresponding quantity of soap, to act as an adhesive, or "sticker." It should be applied with a sprayer fitted with elbow extension, and special effort should be made to coat thoroughly the under surface of the leaves. Two or three applications at 5 to 8 day intervals are sufficient, even in case of severe infestation, provided the first application is made promptly on the first appearance of the insect.

The pest can also be controlled by nicotine sulphate, ½ pint, 40 per cent solution, in 50 gallons of water, with 2 pounds of soap added, which is a deterrent. It is not possible, however, to control this insect entirely when it occurs in its greatest abundance.

In addition, it is desirable to keep the plants thrifty and well watered. Mechanical and crop traps can be used with advantage. Clean culture is always advisable, especially the destruction of weeds in and near cultivated fields.

SACALINE, OR EUREKA CLOVER, RECEIVES UNWARRANTED FAME

(*Continued from page 1.*)

Unfortunately, according to the specialists of the Bureau of Plant Industry, this plant holds little promise of usefulness in the United States. It is not a clover at all, nor even a legume, and so has no power to add nitrogen to the soil by using that in the air.

Sacaline, as it should be called, belongs to the buckwheat family. It is a broad-leaved perennial plant that in favorable situations will grow 6 to 15 feet high and can be used for forage when there is nothing better. However, reports of enormous yields have been based on the yields of single plants in favorable localities, and no such yields need be expected from field culture. It has never succeeded in dry regions.

The advice of the department on this plant is to leave it alone, or, if one wants to try it, get a few plants and see how they thrive. From a few plants a start can be had, so that larger areas may be set out if the plant is a success. Those interested may obtain additional information by writing to the Bureau of Plant Industry, United States Department of Agriculture.

HOME DEMONSTRATION AGENTS HELP FARM WOMEN IN MANY WAYS

Methods of Earning Money Make Wide Appeal, but Sewing, Cooking, and Canning Demonstrations Meet with Popular Favor—Home Betterments and Improved Living Conditions Follow

DIFFERENT WAYS BY WHICH FARM WOMEN EARN MONEY

Farm women are more and more taking advantage of opportunities, not open to city women, to earn their own spending money in the various enterprises possible to conduct on the farm. Ways of doing this are taught by the home demonstration agents, whose special duty it is to establish helpful contact with families in their respective districts. Some of the stories told by the home demonstration agents in their reports to the United States Department of Agriculture are very human recitals.

There probably is no busier woman than a certain Mrs. Vallentine, living on a farm in Jackson County, Ark. Mrs. Vallentine raised 2 acres of garlic in 1918, 8 acres in 1919, and 10 acres in 1920. She sells the buttons, or roots, for planting, and the tops, or sets, for seasoning to the chili factories. In 1919 this woman, according to a carefully verified report, sold 30,000 pounds of garlic at 30 cents a pound and 15,000 pounds of seeds, or top sets. In addition, this woman manages a 900-acre farm, her home, and several children, while her husband manages several rice plantations in another county.

Farm women have all kinds of money-making schemes, every one of them involving work and patience and determination. A Mrs. Hilliard, near Athens, Ga., sold $855 worth of pork in 1920, the result of her own labor, and now has several milk cows with which she expects to earn more money. A woman near Hobart, Okla., chose sheep as her particular activity. From 5 head, her start, she raised 11 in 1918. Six rams were sold for $49 and wool brought $24. The second year, 1919, her wool sold for $49 and her sheep for $49. In 1920 this woman sold $109 worth of wool and had 60 sheep in her flock. Her sheep are worth about $500. She always has a little money coming in, and does very little work to earn it.

A farmer's wife living near Manchester, Tenn., has a flock of 135 Rhode Island Red fowls that produced $345 worth of products last year at a cost of about $160.

Mrs. Mary Pettiger, near Fairview, Okla., went into the poultry business with real vim. In 1919 she set 2,500 eggs and sold 1,015 chicks, 200 pullets, 2,313 dozen eggs, and 700 eggs for hatching. She reported net returns of $1,043 in the year. Her principal expense, besides feed, was $75 for an incubator and $23 for a brooder. Feed, some of which she had to buy, was charged at market prices.

FOOD PREJUDICES OVERCOME BY DEMONSTRATION AGENT

As the home demonstration agent from the United States Department of Agriculture visits the mother to discuss with her certain changes in the children's diet, she is frequently met with the objection, "But Mary will not touch that!" This leads to the application of a little psychology in the demonstrations at which children are present. The children may have a taste of any of the food that is prepared at the group meetings. Children will often eat what they see other children eating.

At a recent demonstration in Hampden County, Mass., the dish prepared was vegetable soup, kept hot on an electric plate and served to everyone present. The next day the home demonstration agent called on one of the mothers who had repeatedly stated that she could not get her children to eat carrots. As the agent entered the home she smelt carrots and soup and was greeted with: "You see what I got stewin' here? Eva came home from your place yesterday with a recipe in her hand, and she said she had it at school and it tasted good. So I made it for her. If they want it, they can have it."

The problem of soup and carrots has been solved in that home.

PROFIT RECORDS CONVERT A MAN TO POULTRY RAISING

Money talks. A home demonstration agent of the United States Department of Agriculture in Sheridan County, Wyo., tells of a farmer who remained unconvinced for five years that his wife's dabbling in poultry paid. She has now proved to him through the systematic records she keeps that she can make more money with chickens on 1 acre of land than he can by farming 90 acres.

His wife is now raising chickens on a large scale for exhibition purposes, and also sells chickens and eggs to the Pullman diner service.

EXTENSION SEWING CLASSES GREAT HELP TO ONE WOMAN

Even a busy mother can find time for sewing if she knows how to make every minute count. The classes conducted by the home demonstration agents of the United States Department of Agriculture are intended to teach short cuts in dressmaking and remodeling, and also to train women to help each other with their sewing.

One woman in McPherson County, Kans., reports that besides doing her regular housework and keeping up her usual community duties, she had made for herself during the three months' period assigned two suits and three dresses. She used the dress form and foundation pattern which she had made at the demonstration meetings. She also had made for other women four dresses. Two of these were wool, one of them trimmed with 20 bound buttonholes made according to the specialist's instruction. The other two dresses were of voile. Three blouses, one wool skirt with an inset pocket, one plush coat with inset pockets (the pocket had been demonstrated by the specialist), one baby's coat, a second dress form, assisting a neighbor in the making of two dresses, and showing three women how to make inset pockets and bound buttonholes were also items in this rural woman's record of three months' work.

COUNTRY GIRLS EARN MONEY TO SECURE AN EDUCATION

When a country girl makes up her mind to get an education the shortage of money in the family bank account doesn't necessarily upset her plans. The soil is there and the sunshine, and only grim determination is needed, with the help and suggestion of the home-demonstration agents, to start the work. There are such girls, hundreds of them, and many stories of their fine achievements are reported to the United States Department of Agriculture by the home-demonstration agents.

Five girls living near Little Rock joined a canning club, worked hard all summer, and won scholarships offered by a glass jar manufacturing company and the Arkansas Bankers' Association. One of these girls won the canning club

prize in 1919 and again in 1920. Then she taught a small school for $100 a month and saved most of it. This, with her canning-club winnings, is helping her through college.

Another girl, in Mississippi, won enough money with her canning work to attend Women's College at Hattiesburg, paying all her expenses for the first part of 1919 and all of 1920. Her mother said the girl could not have gone to college if she had not done the club work. Canned peaches, that she sold for $2.50 a dozen, started another Mississippi girl in her studies at the agricultural school at Ellisville, and provided enough money in addition to pay for her school clothes.

Banks everywhere are providing money for scholarships, ranging from $50 to $150, and often are paying the entire expenses of the little fairs at which the boys and girls display the result of their hard work.

TOMATOES BRING GOOD RETURNS TO CLUB GIRLS

When a city girl feels the need of money—her own money, to pay for the things girls imagine they must have these days—she goes to work in an office, a store, or a factory, according to her education and opportunity. In the country a girl, with much the same longings for nice things and "good times," looks to the poultry yard, the milk house, or the garden for her spending money. If her parents are the right kind, if they are intelligent enough to help her and encourage her in her work, she will soon establish herself as a semi-independent member of the family. If, as often happens, the parents are not disposed to have such goings-on, and there is no home-demonstration agent, no girls' club, no extension work of any kind in the community, the country girl goes to the city and the farming regions have lost one more potential home and family.

No doubt exists in the minds of men and women of large experience in the extension work carried on by the United States Department of Agriculture in cooperation with State agricultural colleges that the economic appeal is the entering influence needed in getting their clubs or bureaus started in rural regions. Once the young people have learned a way to earn money the desire for the things it will buy asserts itself, and home betterments and improved living conditions follow naturally.

Down in Arkansas a girls' canning club started a contest to determine which of the members could produce the most tomatoes at the least expense, and with the lowest percentage of waste. Annet Sargo, on the Mount Valley route, near Hot Springs, grew 3,140 pounds of tomatoes on one-tenth of an acre, at a cost of $31.40 and net returns of $109. With the same expense her sister, Fannie, grew 3,020 pounds and had a net return of $107.89. Ada Rosamond grew 2,803 pounds, costing $27.42, with a net return of $76.66, and Ruby Waddell, at Bonnerville, had 3,070 pounds, costing $29.91, with net returns of $68.

BOYS AND GIRLS ORGANIZE THEIR OWN COMMUNITY CLUB

A team of club boys from Cass County, Iowa, won the pig club demonstration at the State fair last fall. Later the United States Department of Agriculture asked this team to demonstrate daily in its exhibit at the National Swine Show at Des Moines. Immediately thereafter the members of this demonstration team, with other enthusiastic boys and girls of their home community, organized the "Progressive Club of Washington Township," with their own officers and program of work.

Regular monthly meetings of the club are held. Part of the time is given over to songs and yells and a game hour. The business program includes discussions of subjects related to the farm or home. Reports from members who are engaged in various club activities, telling their experiences and results, also form a part of the program.

The boys decided to enroll in a pig club this year and the girls to take up sewing-club work. A committee has been appointed for each group to secure new members. It is planned to put on a demonstration by each section of the club at the State fair next autumn.

The local leader of the club is a rural teacher and the work is done under the direction of the county agent, who has already received requests from other communities near by asking how they could form similar clubs. Such a club has the advantage of interesting the boys and girls of a community in local problems and will probably be the means of encouraging them to remain in farm work.

WOMEN FIND HOME INDUSTRY GOOD WAY TO EARN MONEY

In Orange County, Fla., one of the members of a home club organized by the home demonstration agent is making a specialty of "gift boxes," and is doing well with her enterprise. These attractive boxes contain a few perfect oranges, grapefruit, and kumquats, and are sold all packed and ready for shipment to the tourists who send them North as gifts to friends. During the best part of the winter season this club member sells 40 to 50 boxes a day, and on each she makes a very fair profit.

Thousands of home women are found in every State who are anxious to earn money without going from home to do it. Hand-painted china, embroidery, and crocheted articles are usually the first things thought of as a possible means of producing pin money or in some instances a most necessary living income. The amateur manufacturer soon finds, however, that the demand for such articles is small and that as income producers they are a failure, for almost every woman is able to make them for herself and few desire to buy them ready-made.

The home demonstration agents who were sent out by the United States Department of Agriculture and the State agricultural colleges advise the women in their territories who are anxious to earn some money of their own not to try to sell something that the majority of women can produce for themselves, but to look over the local field and to see if there is not something which people want and need that the one desiring an income can make better than anyone else or something that she can supply from her resources for which there is a real demand. The county agents, knowing local conditions and individuals, can usually be of much assistance in helping a woman decide what is the best article for her to attempt to sell and what is the best way to market it.

It may be, if the woman lives in the country or in a small town, that she has plenty of honey and currants and can make the delicious bar-le-duc, a small jar of which brings a good price in the city, or she may be taught how to make it, if she has the raw material. Basketry is taught in some sections of the South where the "long-leaf" pine abounds. The baskets are filled with jars of orange and grapefruit marmalade and are sold to tourists.

MONTANA REPORTS FIRST WOMAN FARM BUREAU HEAD

Congresswomen and lady aviators have long been with us, but Sanders County, Mont., has the unique distinction of having the only woman county farm bureau president in the United States. Mrs. Lizzie Lynch was elected to this office a year ago and filled the office with such efficiency that she was unanimously reelected for the ensuing year. Mrs. Lynch has been a resident of Plains Valley for the past 35 years and is a farmer and stock raiser. She has personally superintended the "Lynch Ranch" for the past 20 years, and has made it one of the best hay ranches in the State.

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RELATION OF DEPARTMENT OF AGRICULTURE TO BUSINESS

Secretary Wallace Discusses Regulatory Work and Proposed New Laws.

New York Business Men Told That if Grain Exchange and Packer Regulation Laws Are Placed Under Department They Will Be Administered Fairly to All Concerned.

In an address on the Department of Agriculture and its relation to business, given before a group of New York business men, June 7, Secretary Wallace referred briefly to the relation of the department to business through its administration of the various regulatory laws which have been passed since 1900. He said that during the first 40 years of the life of the department its chief endeavors were in the direction of promoting production, but beginning about 1900 it had become more and more closely related to business of various kinds.

Contact with Many Business Concerns.

For example, it administers the Food and Drugs Act, which forbids the adulteration or misbranding of any article of food or drugs, and thus comes in contact with thousands of business concerns throughout the country. It inspects all of the meats which pass into interstate commerce and, therefore, has representatives in every packing house which does an interstate business. It administers a number of quarantine acts dealing with live stock and with plants.

It has charge of the National Forests and has come into relations with all kinds of business through its study of the most economical use of wood. It administers the laws which deal with the protection of game animals, birds, and fish. It checks up the manufacture of serums and toxins. It established standards for grains and sees to their enforcement, and the decisions of its inspectors are now respected by everyone connected with the grain trade.

It fixes and enforces standards of size for boxes and baskets used in the packing and selling of fruits, berries, and vegetables. It administers the act dealing with future trading in cotton and disputes are submitted to its representatives for final decision.

At almost every session of Congress some new legislation is enacted which imposes additional duties on the department in the way of administering regulatory laws.

Bills Now Before Congress.

Referring to the two bills now under consideration by Congress, one dealing with future trading in grain and the other dealing with the packing plants, Secretary Wallace said that the department had not initiated either of these measures; that they have grown out of a belief on the part of large numbers of farmers that our grain exchanges are places where the prices of farm grains are manipulated to the disadvantage of the farmer, and that our larger packing enterprises are conducted in such a way as to produce violent and unfair fluctua-

(*Continued on page 16.*)

SERIOUS OUTBREAK OF STABLE FLY THREATENED IN GRAIN BELT

Attention must be given to the stacking of straw during threshing if the terrible outbreak of stable flies of last year is not to be repeated this season. The field men of the Bureau of Entomology, United States Department of Agriculture, state that these blood-sucking flies were present in unusual numbers in June. With many old straw stacks still in the fields, and the usual careless piling of straw at threshing time, and some heavy summer rains, these flies will develop into veritable hordes late in the summer.

Keep barnyard manure, especially if containing straw, cleaned up and scattered on the fields to permit the sun and drying to kill the maggot stage of the flies. Stack the straw; don't blow it out in an irregular loose pile. Build vertical sides. Keep middle well filled and tramp well. Clean up around base of stacks and scatter remnants. If it is certain that the straw will not be used for feed, spread it at once to be plowed under, or if that can not be done burn the stacks immediately.

FEDERAL-AID ROADS UNDER CONSTRUCTION OR COMPLETED

Nearly Sufficient to Encircle the Globe When Construction is Finished.

More Than 15,000 Miles of Earth, Sand-Clay, and Gravel Account for One-Third of Total Cost—Nearly 5,000 of Hard Surfaced Roads.

Of the 22,030 miles of Federal-aid roads which have been built or are now under construction, more than two-thirds are earth roads, sand-clay, or gravel, says the chief of the Bureau of Public Roads, United States Department of Agriculture. These have cost less than one-third of the total amount expended as compared with nearly 50 per cent of the estimated cost applied to 4,890 miles of hard-surfaced roads. A study of local conditions by an engineer of the bureau is necessary before a road project may receive Federal aid.

Type Determined by Traffic.

The type of road to be used and the most suitable surface with respect to the traffic of the locality must be determined. Service must be satisfactory, while costs must be kept low, both for building and maintenance. There must be a careful analysis both of the engineering and economic conditions for each particular project. There are individual considerations in every case which affect the determination as to the best type of road materials for that locality.

The mileage of Federal-aid roads which have been built or are now under construction is nearly sufficient to encircle the globe. This is the record of work accomplished since July, 1916, when the Federal Government first stepped in to aid in the enormous task of building highways that are now called upon to carry more than 9,000,000 motor vehicles plus a very substantial horse-drawn traffic in the 48 States.

The Federal-aid law is well named. The Department of Agriculture has given the broadest possible construction

to the law for the purpose of providing the greatest mileage of highways suited to the traffic to be carried over them at the minimum expense. An analysis by the Bureau of Public Roads of the projects under contract shows that all types of roads, from the graded earth road up to the finest paved surfaces, have been built.

Help Build 22,030 Miles of Highway.

On March 1 of this year, 22,030 miles of highway, extending into every State, had been completed or were in process of construction, says the bureau, at a total estimated cost of $361,946,868. The percentage of this total estimated cost which will be incurred for each type, and the mileage of each type, based upon the records of plans approved, are as follows:

Per Cent and Mileage of Each Type of Road.

	Per cent of total estimated cost.	Mileage.
Type 1, including earth, sand-clay, and gravel	32.2	15,300
Type 2, including water-bound and bituminous macadam	9.0	1,530
Type 3, including brick, bituminous concrete, Portland cement concrete	48.8	4,890
Miscellaneous	4.0	310
Bridges	6.0	.....
	100.0	22,030

The States initiate the road projects, but before Federal aid is granted an engineer of the bureau makes an inspection of the roads to be improved, studies the local conditions, consults with the State highway department, and no projects are approved which are not considered suited to the conditions to be met. Many popular fallacies exist as to road improvement, and there have been many misconceptions as to the types of roads on which Federal-aid funds may be used. Properly built earth roads, say specialists of the department, are the fundamental requirement in all highway improvement.

Regardless of the material or type of surfacing which is to be placed, the preparation of the roadbed requires the highest engineering skill and experience. The department considers that the use of adequate sums for the securing of proper location, thorough drainage, permanent bridges and culverts, and the elimination of railroad crossings is demanded if enduring improvements are to result.

Federal aid is allotted to the improvement of earth roads, but only with the stipulation that a suitable surfacing will be placed as soon as funds become available. This allows the roadbed to be prepared and become thoroughly consolidated before the surfacing is placed, which is highly desirable from a construction viewpoint. To follow such a course, however, is out of the question when a road is heavily traveled and some form of surfacing must be provided. To care for traffic under these conditions, frequently a sand-clay or gravel surfacing is provided, which will serve for several years and yet allow the road to be maintained under reasonably heavy traffic.

Use Many Kinds of Road Surface.

Granting that the preparation of the roadbed has been properly done, many kinds of road surfaces will give excellent service. The element of time is important. There are so many miles of roads to be constructed, and their cost will be so enormous that the most careful and detailed study of each road project must be made to provide, at the lowest possible cost, roads which will give satisfactory service and which can be maintained without undue depreciation under the traffic which is to use them. Many times the question has been asked the bureau, What type of road is best? The answer is always the same: There is no one best kind or type of road surface.

A recent statement issued by the officials of the bureau expresses this thought in the following language:

"It is the policy of this bureau to consider the conditions on each individual Federal-aid project as there are elements, such as subgrade, drainage, and present and prospective traffic, which vitally affect the determination of the standards of construction to be used."

That is, there must be a careful analysis both of the engineering and economic conditions for each particular case to determine the kinds of materials that can be used successfully, and after these facts are determined then the various types of construction which can be used economically should be brought into competition to secure the best possible results. There have been occasional attempts to write into State laws or the governing conditions of bond issues a requirement as to the type or kind of roads to be constructed. To follow such a course would be most unfortunate.

No Particular Type Recommended.

The cost must always be considered in determining the type of road surfaces which are selected, and the allowable cost must be determined by the traffic which is to be borne. Local conditions vary to such an extent that very careful consideration must be given each project before determining the character or type of roads to be built. This principal was recently expressed to a chamber of commerce asking for information in the following language:

"Types of highways should not be specified by law. This is a matter to be decided by the State highway department, in which should be lodged full authority both to construct and to maintain. Competition between different types of material should be maintained and selection made to fit traffic requirements in each case. The bureau does not recommend any one type to exclusion of others."

NEW RULES FOR INTERSTATE SHIPMENT OF LIVE STOCK

Regulations governing the interstate movement of live stock, which become effective on and after July 1, 1921, and which supersede previous regulations on this subject, have been published by the United States Department of Agriculture. For purposes of identification these regulations are designated as B. A. I. (Bureau of Animal Industry) Order 273. The regulations published in the circular prescribe for the inspection, disinfection, certification, treatment, handling, and method and manner of delivery and shipment of live stock which is subject to interstate commerce. The enforcement of the regulations is assigned to the Secretary of Agriculture by acts of Congress. Their purpose is to control the interstate shipment of live stock, and prevent the spread of diseases.

Included in the publication are acts of Congress relating to this subject, general provisions, and regulations to prevent the spread of the following diseases: Splenetic, southern, or Texas fever in cattle; scabies in cattle and sheep; dourine in horses and asses; hog cholera and swine plague; and tuberculosis in cattle.

MAKE PLANS TO GRADE AND MARKET MISSOURI WOOL

Plans for grading the 1921 Missouri wool clip are now being made by the Missouri State Marketing Bureau. The Bureau of Markets, United States Department of Agriculture, has been requested to help with this work, and will be represented by its wool-marketing specialist. The clip is being assembled into local pools. Five or more competent wool graders will be selected to make a tour of the State to demonstrate approved grading methods. From time to time regional conferences among the growers will be held, at which the value of grading wool near the point of production will be explained and various marketing methods discussed.

NO BURDENSOME RESTRAINT ON PLANT IMPORTATIONS

Federal Horticultural Board Gives Facts Relative to Quarantine No. 37.

Ample Provision Made for Importation of Plants Under Suitable Safeguards—Most Bulbs, Stocks, and Scions May Be Freely Imported Under Permits.

No plants are absolutely prohibited entry into the United States under Quarantine No. 37 or under any other Federal plant quarantine. Ample provision has been made for the importation into the United States of any plant whatsoever, whether for introduction, experimental, scientific, or other purpose. The Federal Horticultural Board of the United States Department of Agriculture has no wish or intention now or at any time to make it impossible to provide for the entry under proper safeguard of any plant for which a reasonable need can be indicated.

How Plants May Come Into the United States.

1. Unlimited entry is possible without permit or other restriction of field, vegetable, and flower seeds, and of fruits, vegetables, cereals, and other plant products imported for medicinal, food, or manufacturing purposes.

2. Unlimited entry is possible under permit of from 80 to 90 per cent of the bulbs hitherto imported; of all stocks, cuttings, scions, and buds of fruits; the important rose stocks, and all seeds of fruit and forest trees and of ornamental plants and shrubs, including hardy perennial plants.

3. Entry, limited only by legitimate needs, of all other plants is provided for under special permit for the purpose of keeping the country supplied with any new variety or any necessary propagating stock.

4. The exceptions to these paragraphs (1 to 3) are those involved under specific quarantines, as, for example, the quarantines relative to citrus plants, bamboo, banana, etc., but any plants prohibited entry under such quarantines may be imported by or through the Department of Agriculture for any necessary experimental, scientific, or introduction purposes.

The classification of plants given above includes all plants and seeds whatsoever for propagation or other uses, and indicates clearly the purpose of the department and the provisions of the quarantine to provide for the entry now and hereafter of any necessary or useful plant and in quantities sufficient to meet any reasonable need.

It is not necessary to consider the importation, which is unlimited as to quantity and practically unrestricted, of the plants and seeds in the first two groups of plants as classified above. The third group of plants in this classification includes all ornamentals and other plants not included in groups 1 and 2. Provision is made under the quarantine for the importation of any of these plants under special permits, the only limitation being the showing of the necessity for their importation to supply stocks of any new plants or of any old plants not now commercially available in the United States, for the purpose of establishing reproduction plantings which may ultimately make this country independent of further foreign supplies.

With respect to such importations, the department has adopted a policy of great liberality under the point of view that it wishes to afford every reasonable means for the introduction for the purpose indicated of any plants not now available in this country. The immediate sale of plants thus imported is necessarily not permitted, and the plants imported are required to be kept and utilized for the purpose of reproducing additional stocks for the period (one to five years) designated in the permit, this period being based upon the time needed for such multiplication or reproduction.

No restrictions are placed on the sale of any plants produced from such imported stock except that the importer will be expected to maintain a sufficient supply to meet his continuing needs. Special permits for such importations are issued to any and all applicants who agree to the conditions of the permits and will be continued to be issued with respect to any plant until the Department of Agriculture is convinced that adequate stocks are commercially available in the United States.

Plant Experts Pass on All Special Permits.

With respect to any request for a special permit, the determination whether the plants requested are either new or are commercially unavailable in the United States is made by a committee of experts appointed by the chief of the Bureau of Plant Industry of the department—men who are thoroughly acquainted with the subject. In addition, the recommendation of this committee before being returned to the Federal Horticultural Board receives the approval of the chief of that bureau. With respect to such permits, furthermore, the department recognizes that plants may be common throughout the country and yet not available commercially, and for such plants also special permits will be issued. The board, however, will give careful consideration to evidence with respect to any permit which would warrant its issuance even over the recommendation of the experts of the Bureau of Plant Industry. The board's own function with respect to such permits is to insure uniformity and to enforce the conditions embodied in the permits.

The requirement of a bond in connection with such special permits has been objected to in a few instances. It developed that such bonding of permittees was a necessary requirement. The mere promise of a few importers at least was apparently not sufficient, and at the outset plants imported under special permits for the purpose of propagation were in some instances promptly sold in violation of the permit. The bond seems to be the only means of insuring full compliance with the permit, and, unfortunately, it is a burden which must fall on all alike. The bond employed, however, is the one which has been long used in the customs service for similar purposes and has not proved any serious bar to plant importations, as evidenced by the special permits already issued and the importations made thereunder.

Importations of "Prohibited Plants."

The records of the department indicate that since the promulgation of this quarantine some 650 permits have been issued for the entry of these so-called "prohibited plants." The plants authorized entry in these permits include bulbs, ornamentals, roses, orchids, herbaceous plants, etc., to a total of upward of 16,000,000 plants. The bulk of these is naturally represented by bulbs and bulblets which must be secured in large quantities for adequate reproduction purposes, but the permits also include several hundred thousand ornamentals. Altogether these permits include authority for the entry of 5,000 different varieties of plants out of some 5,500 covered in the requests received; in other words, 10 out of 11 of the plant varieties requested have been authorized entry.

These special permits are valid or may be extended until the plants authorized have been secured and entered and many of them are still in force. The "prohibited plants" thus imported are now being grown in hundreds of establishments in some 25 different States and also in the District of Columbia. This new plant-production development should within a few years make us independent of much of the stock which was formerly secured abroad and will build up horticulture and floriculture in this country in the most constructive and permanent way, and, at the same time, accomplish the object of the quarantine, namely, to lessen very materially the danger, which has hitherto been a continuing and heavy one, of entry of new destructive plant pests.

Donating Members of the International Institute of Agriculture at Rome

The president of the International Institute of Agriculture at Rome has transmitted to the Secretary of Agriculture, through the State Department, a copy of resolutions adopted in April, 1921, by the permanent committee of the institute, authorizing the conferring of the title "Donating Member" upon any person who makes a gift, donation, or contribution to the institute amounting in value to 10,000 Italian lire, which at normal rates of exchange is equivalent to about $2,000. Following is a translation of the text of the resolutions:

Resolutions Adopted by Permanent Committee.

"1. The title of donating member of the International Agricultural Institute shall be conferred upon every person who makes any donation or bequeaths any legacy to the institute, provided it is accepted by the permanent committee and its value, in money or in kind, is estimated at the sum of 10,000 Italian lire.

"2. The title of donating member shall not be conferred until a special report has been made to the permanent committee by the special committee and until a vote has been taken in which three-fourths the voters so approve.

"3. The names of the donators shall be inscribed on a marble slab, stating their nationality and the date of the donation or legacy. This slab shall be placed in one of the halls or in the vestibule of the institute."

The permanent committee wished to demonstrate in a tangible manner the gratitude of the International Agricultural Institute toward all persons whose generous impulse prompts them to make gifts to it in money or in kind, thereby contributing toward the fulfillment of the mission intrusted to it.

The permanent committee has already named as a donating member Mr. Victor Vermorel, member of the National Academy of Agriculture of France and former senator, thus testifying to him its gratitude for a generous gift which he made to it recently.

Owes Origin to the Late David Lubin.

The International Institute of Agriculture was established as the direct result of the efforts of David Lubin, a successful merchant of California, with the active support of the King of Italy, who foresaw the advantages which would accrue to agriculture, commerce, and industry from an international clearing-house for systematically collecting and disseminating official information supplied by the various Governments of the world on agricultural production, consumption, movement, surpluses, deficits, and prices of agricultural products, transportation, plant and animal diseases and insect pests, rural credits and insurance, standard of living, wages and hours of labor on farms, cooperative organizations of farmers, legislation affecting agriculture, and similar information. The international treaty was drafted at Rome on June 7, 1905, and has since been ratified by more than 60 Governments.

The institute survived the trying period of the World War and is now entering upon a period of expansion and increased usefulness. Its work benefits all peoples. In accordance with the recent action of the permanent committee, which is made up of delegates from the adhering Governments and serves as a board of directors of the International Institute of Agriculture, citizens of the United States and other countries who are in sympathy with the purposes of the institute have an opportunity to contribute to its support and development and to receive permanent recognition therefor as "donating members" by having their names and nationality and the date of their donation inscribed on a marble tablet which will be placed in a conspicuous position in the halls or vestibule of the marble palace occupied by the institute, situated in a beautiful park on an elevation overlooking the Eternal City. Such donations can be made either through the Secretary of Agriculture, the Secretary of State, or the American delegate to the International Institute of Agriculture, Rome, Italy.

Prosperity of the Nation Depends Upon Protecting Forests from Fires

Forest fires in the United States annually destroy more than 2,000,000,000 feet of timber, or material enough to build a 5-room frame house every 100 feet on both sides of a road extending from New York to Chicago, according to the Forest Service, United States Department of Agriculture. With four people to a house, these 100,000 or more buildings would provide a home for nearly one-fourth our yearly increase in population, a number sufficient to populate a new city each year the size of Cincinnati, New Orleans, Minneapolis, Kansas City, Mo., or Seattle.

More than 160,000 forest fires have occurred in the United States during the past five years, 80 per cent of which were due to human agencies and therefore preventable. These conflagrations burned over 56,488,000 acres—an area greater than that included within the States of Ohio and Pennsylvania—and destroyed $85,700,000 worth of timber and property. If this needless waste were stopped and the material thus saved put into houses, the various business interests concerned in building construction, such as lumber dealers, carpenters, masons, and supply houses, would, it is estimated, benefit to the extent of more than $400,000,000 annually. Bankers and real estate dealers would also profit through the sale of lands and by loans on homes to the extent of an additional $300,000,000. Forest fires are therefore of vital concern to not only the everyday citizen but to every business man and laborer.

Forest protection goes hand in hand with national prosperity. Next to food and clothing, wood is the most indispensable product of nature. Without wood there can be no agriculture, no manufacture, no commerce. Forest fires destroy life and property, impoverish the soil, drive away animal life, cause floods and drought, and make waste the playgrounds of the people. President Harding, at the request of the Forest Service, proclaimed the week of May 22–28 as Forest Protection Week in order that the present unnecessary waste of the timber resources of the country and the serious condition of our forests could be brought widely to public notice, and its local observance took place in all parts of the country.

NAMES DEPARTMENT COMMITTEE TO STUDY ECONOMIC PROBLEMS

A standing committee has been appointed within the Department of Agriculture by Secretary Wallace to study the present economic situation of agriculture and make recommendations with respect to any action which might be taken by the department to improve conditions. The committee consists of Assistant Secretary Ball, chairman; Dr. H. C. Taylor, Chief of the Office of Farm Management and Farm Economics; Dr. W. A. Taylor, Chief of the Bureau of Plant Industry; Dr. John R. Mohler, Chief of the Bureau of Animal Industry; and Leon M. Estabrook, Associate Chief of the Bureau of Markets. The members are gathering data from sources in the Department of Agriculture, and agricultural leaders and economists in various parts of the country will be consulted.

They are also making a careful survey of the activities of the department in the field of economics with the purpose of coordinating and strengthening this work.

Basic Factors Which Farmers Can Use to Figure Cost of Growing Crops

Figures from which the farmer can compute for himself the cost of production of corn, corn for silage, wheat, oats, and hay, under given conditions, are presented in a preliminary report on labor and material requirements of those crops, recently issued by the United States Department of Agriculture. These figures cover the normal hours of man labor and horse labor, and quantities of seed, fertilizers, etc., required per acre for each crop, as determined by surveys by the Office of Farm Management and Farm Economics.

Apply Basic Factors to Current Rates.

The money cost is found by applying to these basic factors the current rates for labor, seed, etc. Inasmuch as it has been found that, in general, labor and material costs approximate 80 per cent of the total operating cost for these crops, it is easy to find this total when the labor and material costs are known. The total cost of production is then found by adding to the operating cost the current rate of interest on investment in land, or the rent per acre in the case of a tenant farmer.

The figures given represent average crop requirements for the regions where investigations have been made. If the farmer does not have precise records of labor and material expenditures for his own farm, he can estimate them pretty closely by taking the average for his own region as a basis and applying current rates for labor and materials, with due allowance for any unusual conditions that may exist in his own case. The method of computation is as follows:

1. Determine the total cost of labor and material per acre by applying current rates to the quantities of labor and materials obtained from the individual's own records, or, if such are not available, use those given in the table.

2. Determine the total operating expense per acre by dividing the cost of labor and material by the percentage figure given for each region.

3. Determine the total acre cost of production by adding the interest charge or the cash rent paid for the use of land.

4. To determine the cost per bushel or ton divide the total acre cost by the yield per acre.

The following example shows how this method worked out in figuring the cost of corn for silage on an Iowa farm:

	Amount.	Estimated rate.	Cost.
Man-hours	27.9	$0.35	$9 76
Horse-hours	51.8	.25	12.95
Seed, pounds	9.9	.08	.79
Manure, tons	2.2	2.00	4.40
Gasoline, gallons	2.8	.25	.70
Coal, pounds	14	.005	.07
Twine, pounds	3.6	.25	.90
Total labor and material (80 per cent of operating expense)			29.57
Total operating expense (100 per cent)			36.96
Interest on 1 acre of land ($200 at 5 per cent)			10.00
Total cost			46.96

Average yield per acre, 9.8 tons.
Average cost per ton, $4.80.

POSTER EMPHASIZES VALUE OF GOOD DAIRY COWS

"For the Children's Sake" is the title of an attractive poster just issued by the United States Department of Agriculture, to be used in its Better-Stock campaign. The poster shows two cows, each surrounded by pictures of healthy children. Good milk, it is well known, is a health-giving food for children, but scrub cows do not give enough milk to feed many children. One of the animals shown on the poster is a scrub cow which produced about five quarts of milk a day—enough to supply the five children who are grouped about her. The other cow is a purebred, which gave a daily yield of 20 quarts—enough to feed the 20 children surrounding her.

"A good dairy cow," says the poster, "produces enough feed to feed about 20 children a quart of milk a day. An ordinary cow produces enough to feed about five children a quart a day. Every quart of milk contains health and a smile for some baby."

YELLOW STREAK IN NOODLES—DYE, NOT EGGS, SOMETIMES

The yellow streak in noodles and egg noodles put out by some manufacturers is made by yellow dye and not by eggs, according to the officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of the Federal Food and Drugs Act. Food inspectors have been instructed to watch interstate shipments of noodles and egg noodles in order to enable the Department of Agriculture to check this practice, which, under the provisions of the Food and Drugs Act, is illegal.

Noodles or egg noodles as defined in the standards as adopted by the United States Department of Agriculture for the enforcement of the Food and Drugs Act contain at least 5 per cent of the solids of eggs. Eggs have long been considered by consumers as an essential ingredient of noodles and egg noodles. The only purpose in adding a yellow dye to noodles is to make them appear to contain eggs, say the officials. A yellow dye adds nothing to the taste or the food value of the noodles. Most consumers in purchasing yellow noodles expect to get noodles containing eggs.

There is one kind of noodles which are not supposed to contain eggs. They are commonly called "water noodles," or sometimes "plain noodles." Such noodles are not dyed yellow, so the fact that they contain no egg is apparent to purchasers. The use of yellow dye, which costs little, in place of eggs, which cost real money, is not only a fraud upon the consumer, but makes unfair competition among manufacturers, according to the officials of the Bureau of Chemistry. It is difficult for reputable manufacturers of unadulterated noodles to meet the competition of the cheapened product, whereby the consumer receives an article that contains foreign coloring matter and much less nutritive substance than the genuine noodles he expects to receive. Where the output of a factory is large the profits made by substituting yellow dye for eggs may be very great.

Appropriate action will be taken, say the officials, to check this illegal practice in all cases found coming within the jurisdiction of the Federal Food and Drugs Act.

FEATURE POISONOUS PLANTS IN GOVERNMENT EXHIBITS

Great numbers of horses, cattle, and sheep, especially in the West, are lost annually from feeding on poisonous plants. To aid stockmen in identifying such plants, an exhibit consisting of pictures of plants in natural colors, and others showing characteristic symptoms of plant poisoning in animals, is being prepared in the Bureau of Animal Industry, United States Department of Agriculture, to be shown at fairs and agricultural meetings.

A general synopsis of the subject and references to publications containing directions for treatment of animals poisoned through eating such plants, and other valuable information are given.

Find Method to Utilize Waste of Grape-Juice Factories Now Thrown Away

The possibility of practical and profitable commercial utilization of the stems and pomace from the grape-juice factories which are now wasted is pointed out by experts of the United States Department of Agriculture in an investigation just published as a professional paper in Bulletin No. 952. The bulletin details methods of utilizing the waste from the grapes by manufacturing the stems into cream of tartar, the skins into jelly, and the seed into oil, meal, and tannin extract.

Inquiry among the grape-juice manufacturers of Eastern United States shows that the average quantity of grapes crushed for beverage purposes in the five years from 1914 to 1918 was 22,000 tons, and that an average of 660 tons was discarded in stems and 4,400 tons in wet pomace, constituting 75 per cent skins and 25 per cent seeds.

Cream of Tartar from the Stems.

From the above quantity of waste it is shown that the stems yielding 2 per cent of cream of tartar can be made to yield 13.2 tons of this product, which has considerable commercial value and utility.

Jelly from the Skins.

The pomace after the seeds are separated can be made into a good grade of jelly by a simple process. It is calculated by the experts that 3,300 tons of wet skins would be available annually from the wet pomace, from which it is estimated that 19,800,000 eight-ounce glasses of jelly can be manufactured. There would result from this operation about 1,435 tons of dry residue possessing value as stock feed.

Oil Meal and Tannin Extract from Seed.

The grape seeds, comprising 5 per cent of the total weight of fresh grapes, or about 1,100 tons, can, after hulling and grinding, be manufactured into oil by two different methods known commercially as the pressure method and the solvent extraction method. The total oil content of the seeds is estimated at 13 per cent, not all of which, however, can be successfully recovered. Taking 1,100 tons of seed as a basis, it is estimated that by means of the pressure or expeller method about 89.3 tons of oil and 526.7 tons of oil cake can be obtained. The 484 tons of hulls made available by this process are calculated to yield 48.4 tons of tannin extract. By means of the solvent extraction method about 132 tons of oil, slightly inferior to that of the pressed oil, can be obtained; also 968 tons of meal possessing a lower market value than the press cake from the pressure method. The total value of the products obtained from the seed by either of the above methods is practically the same.

Refining, bleaching, and deodorizing of the oil will produce a very palatable condimental oil possessing qualities similar to those of the soy bean and cottonseed oil.

Prolongs Use of Factories.

Since scarcely enough pomace is produced at any one factory to pay for immediate utilization of the seeds and skins, it is considered practicable to dry the wet pomace, after which the seeds and skins can be separated by machinery and the product stored in bags until after the rush of the grape-juice manufacturing season. The material can then be manufactured into the products mentioned, thus enabling the plant to operate over a longer period of time and thereby cutting down overhead expense of operation.

Reclamation of the Waste.

It is further pointed out that the reclamation of the waste from grape-juice factories and the conversion of the same into commercial products of value possess possibilities far-reaching in effect, both as regards the consuming public and the manufacturers, and is worthy of the most careful and serious consideration as a conservation measure.

AID TEACHING OF AGRICULTURE IN ELEMENTARY SCHOOLS

Agricultural courses for elementary schools, prepared by the United States Department of Agriculture, have been adopted in Wisconsin, Ohio, Maryland, Virginia, and Arkansas. These courses are suitable for use not only for elementary schools but for consolidated rural schools and secondary schools. They have been prepared at the request of the State authorities, and the department specialists have cooperated with the State boards of education and the State agricultural colleges in their preparation.

In addition to preparing complete courses in agriculture, the Federal specialists in agricultural education have series of lessons on different phases of agriculture, which are being used extensively in a number of States. Topics relating to growing hogs, selecting and growing corn, potatoes, poultry, etc., have been worked out, the department publications on the various subjects being used as a basis for the information in these studies.

Leaflets on how teachers may use certain farmers' bulletins have been prepared. These leaflets have been widely distributed, and they have been in great demand among teachers of agriculture.

RECORDS SHOW NO RADICAL CHANGE IN SEASONS

"The seasons are changing; we do not have the cold weather we did when I was a boy." Remarks similar to this are frequently heard by representatives of the Weather Bureau, United States Department of Agriculture, but reports on the weather dating as far back as 1780 show that there has been no radical change in the mean temperature from year to year.

An official of the Weather Bureau has compiled the following table from records taken by various observers previous to 1872 and from those of the Weather Bureau Station at New Haven, Conn., from 1873 to the present.

For the 10 years ending—	Mean temperature.
	° F.
1790	49.6
1800	50.0
1810	50.4
1820	47.5
1830	49.3
1840	47.8
1850	49.2
1860	48.9
1870	49.1
1880	49.7
1890	48.9
1900	49.7
1910	49.7
1920	50.5

It will be noted, the official points out, that the warmest three periods are those ending in 1800, 1810, and 1920, and that the coldest decade immediately follows the second warmest.

Considering the individual months and the individual years, it is found that the coldest January occurred as late as 1857. The coldest February occurred eight years after the warmest one. The coldest March was as late as 1870 and again in 1885. The coldest April was in 1874, and many years after the warmest one. The lowest temperature in May was in 1812, 1815, 1870, and 1882. The highest figures in June are in 1779, 1790, 1803, and 1876. In July the lowest was in 1816, with the warmest as early as 1780 and equaled in 1876. The coldest August occurred 61 years after the warmest. In September the coolest months are in the earlier

years, but for October, November, and December the coldest year came after the warmest year in each case.

Thus it will be seen that in nine months of the year the coldest one of record occurred after the warmest one. These figures seem to indicate very clearly, the weather official says, that since the time of the Revolutionary War, at least, there has been no permanent change in temperature.

INTERNATIONAL CONTEST FOR CLUB BOYS JUDGING TEAMS

Probably the greatest gathering of boys in the history of club work will take place at Atlanta, Ga., October 19 to 21, 1921, when club boys representing practically every section of the United States will take part in an International Club Judging Contest. The seven winners in this contest will be given a trip to the English Royal Stock Show, and hundreds of dollars will be distributed as additional prizes. This contest is under the supervision of club leaders representing the State agricultural colleges and the United States Department of Agriculture.

Even though the contest is several months off, many club leaders and members are showing an interest in it and have expressed their willingness to send judging teams. The team from Texas, which defeated the entire field last year, is now completing preparations for the trip to Europe. That State will be represented again at the contest in Atlanta, but this year there will be more competition, for teams from Mississippi, Louisiana, Virginia, Oklahoma, Florida, Arkansas, Alabama, Kentucky, North Carolina, and South Carolina are preparing to enter. Several other States in the North and West have signified their willingness to send teams to the contest if suitable arrangements can be made.

DURABILITY OF WOOD NOT AFFECTED BY TIME OF CUTTING

Many of the theories advanced regarding the durability of wood attribute too much importance to the time of cutting, say specialists of the Forest Products Laboratory, Forest Service, United States Department of Agriculture. As a matter of fact, the time of cutting has very little effect upon the durability or other properties if the timber is properly cared for after it is cut. The method of handling logs at different times of the year, however, does influence their durability.

Timber cut in late fall and winter seasons more slowly and with less checking than during the warmer months, and when proper storage or handling is impracticable, winter cutting is best. Fungi and insects do not attack wood out of doors in cold weather, and by the time warm weather arrives the wood is partly seasoned and somewhat less susceptible to attack. It is for these reasons that winter cutting is advantageous, and not on account of a smaller amount of moisture or sap in the wood in winter, as the popular belief has it. There is practically no difference in moisture content of green wood in winter and summer.

Pulp-Wood Consumption and Production Exceeds All Previous Records in 1920

The pulp-wood consumption of the United States in 1920 exceeded the greatest previous record, that of 1919, by 636,000 cords, or nearly 12 per cent, according to a preliminary statement based on a canvass of all known pulp-wood establishments in the country, 253 in number, conducted by the Forest Service of the United States Department of Agriculture in cooperation with the Bureau of the Census, United States Department of Commerce, and the American Paper and Pulp Association. Tabulated statement of pulp-wood consumption and costs for the past four years follows:

Pulp-Wood Consumption.

Year.	Number of establishments.	Cords consumed.	Cost of wood.	Average cost per cord.
1920....	233	6,114,072	$116,495,720	$19.03
1919....	258	5,477,832	87,286,083	15.93
1918....	250	5,250,794	73,167,118	13.93
1917....	246	5,480,075	60,815,057	11.10

The sum paid for pulp wood last year exceeds by $29,000,000 the amount paid in 1919, and is $43,000,000 in excess of the 1918 expenditure. The average cost of pulp wood in 1920 exceeds the 1919 price by 19 per cent and the 1918 price by 37 per cent.

The records indicate that at least 18 per cent of the wood used was imported. Nearly 7 per cent more domestic spruce was consumed than ever before, and the imports of this species are steadily increasing; so also are the imports of poplar, but the use of domestic poplar has fallen off 42 per cent since 1916.

Wood Pulp Production.

Year.	Production (tons).	Valuation.		Cords consumed, per ton.
		Total.	Per ton.	
1920....	3,821,704	$275,941,213	$72.20	1.60
1918....	3,315,861	174,570,645	52.68	1.58
1917....	3,509,939	150,902,280	43.33	1.56

The 1920 production exceeds that of 1918 by 15 per cent. The sulphite pulp produced exceeded the mechanical in 1920 by less than 2,000 tons.

The ratio of imports to domestic production of wood pulp increased by nearly 6 per cent between 1918 and 1920.

The high prices paid for pulp wood and for labor in 1920 are strikingly reflected in the soaring valuation of pulp, which increased $19.52 per ton, or 37 per cent, in the last two years.

SCREW WORM BEGINS ITS ATTACKS ON LIVE STOCK

The screw-worm fly is appearing in considerable numbers in the Southwestern States, and already a number of cases of infested live stock have been reported by field agents of the Bureau of Entomology, United States Department of Agriculture. While this is about the usual time for this pest to begin its attack on animals, the showery weather which has occurred over a considerable part of the screw-worm territory, especially southwest Texas, is very favorable to the multiplication of the fly, and attention of the cattlemen is directed to the importance of disposal of all waste animal matter.

Work of the Bureau of Entomology clearly indicates that by systematically destroying all carcasses, preferably by burning, the losses due to the injury and death of cattle, sheep, goats, and other animals are greatly reduced and the expense of treating infested animals largely eliminated. In this instance an ounce of prevention is worth many pounds of cure.

A number of progressive stockmen have entered into an active campaign against the flies by means of the use of flytraps on the ranges, in addition to preventing the breeding by carcass destruction. This has been shown to be a good supplementary measure to carcass destruction.

Pontotoc County, Miss., has a larger acreage sown to oats and lespedeza than ever before in its history. Over 350 bushels of lespedeza seed and several hundred bushels of seed oats were bought cooperatively with the aid of the county agent at a saving over local quotations.

Weekly News Letter

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SECRETARY WALLACE PRAISES WORK OF FORMER DAIRY CHIEF

In accepting the resignation of B. H. Rawl, who recently resigned as Assistant Chief of the Bureau of Animal Industry, United States Department of Agriculture, to take charge of the educational work of the California Central Creameries, Secretary Wallace wrote Mr. Rawl:

"I have accepted your resignation, effective June 6, with a great deal of regret. I have long known of your work in the department, and, during the past three months, have come to have even a better appreciation of the valuable service you have rendered here. We can ill afford to lose men who are capable of doing the sort of work you have done, but I realize the attractiveness of the opportunity which is open for you and of the obligation you have to your own people.

"Your constructive leadership in dairy work in the South, your vision and guidance in establishing and conducting the experimental factory at Grove City, Pa., your effective direction of the organization of cow testing and bull associations, your special research studies in breeding and feeding and in manufacture, all have contributed very greatly to promoting the dairy industry on sound lines.

"Dr. Mohler, the Chief of the Bureau of Animal Industry, speaks in very high terms of your work as assistant chief of that bureau during the last 2½ years and, as indicated above, I wish you might be continuing with us in this service.

"I am sure I can speak as well for your associates here and for the great host of people outside whom you have served so helpfully.

"I wish for you the greatest measure of success in your new undertaking."

VARIETIES OF SPRING WHEAT CHANGE IN POPULAR FAVOR

Varieties of wheat change in popularity in the spring wheat belt—Minnesota, North and South Dakota, and Montana. The five leading varieties in these States have made interesting shifts in relative importance in the past seven years, according to data recently compiled by the Bureau of Crop Estimates, United States Department of Agriculture. Marquis was least important in 1914, but in 1916 it had jumped into first place. It has held this place since, although its peak of popularity seemed to have been reached in 1919, when it comprised 58.3 per cent of all the spring wheat raised in these four States, and in 1920, 57 per cent of the wheat grown in these States.

Durum wheat has been making steady gain in popularity since 1914, and is the only one of the leading varieties that gained, relatively, in 1920. It is the heaviest yielder in bushels per acre, the specialists say. Velvet Chaff, Blue Stem, and Fife have each lost in relative importance each year since 1916. In 1920, 57 per cent of the spring wheat raised in the four States mentioned was of the Marquis variety, 26.4 Durum, 8.4 Velvet Chaff, 4.1 Blue Stem, 2.4 Fife, and 1.7 other varieties.

YEAR-OLD SWEET-CREAM BUTTER OUTSCORES NEW YORK EXTRAS

After remaining in storage for one year, samples of sweet-cream butter recently inspected at Norfolk, Va., scored higher than the highest score for butter quoted on the New York market. These samples, which received scores averaging 93.47, were representative of 1,000,000 pounds of butter packed for the United States Navy under the supervision of the United States Department of Agriculture. The scoring was done by a specialist from the Dairy Division and a representative of a commercial butter firm in New York City.

"This butter, which was made for the Navy last year," said the inspectors, "was of such fine quality that we can not neglect the opportunity to comment upon the comparatively small amount of extra work required to produce a product of this quality as compared with the average butter found on the large markets."

This butter was made from a perfectly sweet cream, with a comparatively high salt content and low moisture. The moisture content did not exceed 13.5 per cent. After one year in storage only one sample scored as low as 92½. Of the other 50 samples, 24 scored 94, 2 scored 93½ and 24 scored 93.

Consumers who are accustomed to a pronounced flavor in butter do not at first show favor to sweet-cream butter as it is somewhat lacking in this respect when fresh. A demand for sweet-cream butter, however, is growing steadily, according to butter dealers handling this product. On being held in storage the flavor becomes more pronounced, and for this reason sweet-cream butter is often scored higher after storage than when fresh. For storage purposes such a butter is far superior to the ordinary butter, which usually loses in quality during the storage period.

POSTER MAKES STRONG APPEAL FOR HEALTHY CATTLE

Unlike most other infectious diseases, tuberculosis has an insidious way of working under cover, and oftentimes animals of the most healthy appearance are found to react to the tuberculin test, say veterinarians of the United States Department of Agriculture. No cattle owner can afford to live in doubt as to whether his animals are affected, they add. This point is brought out clearly in a two-colored poster published by the department, on which is shown two herds of dairy cattle. From all appearances the animals of both herds are healthy, but as a matter of fact those of one herd are afflicted with tuberculosis.

The poster also shows two children—one healthy, one diseased—and the point is brought out that tuberculous animals may transmit the disease to children who drink the milk produced. The poster is a strong appeal for healthy cattle, and it is to be used extensively in the tuberculosis-eradication campaign being carried on by the department.

Careful experiments in practical work have shown that tuberculosis can not be detected to any great extent among animals by physical examinations. The most reliable method is the tuberculin test applied by a trained operator. Tuberculin, while regarded as the most accurate diagnostic agency known to science, is safe only in the hands of a trained and skillful operator who is acquainted with its limitations and with the symptoms it produces in the animals to which it is applied, the department veterinarians say.

"BETTER SIRES—BETTER STOCK" CAMPAIGN GOES AHEAD

What the United States Department of Agriculture, in Cooperation with the State Agricultural Colleges and Allied Agencies, Is Doing to Encourage Nation-wide Improvement of Live Stock.

Cow Testing Increases Income and Production for Dairymen

The Ferndale Cow Testing Association in Humboldt County, Calif., is the largest cow-testing association in the United States. In the organization 106 members, owning from 2 to 150 cows, finished the work last year, and the association tested 4,546 cows, according to a report compiled by the western office of the Dairy Division, United States Department of Agriculture.

Not only is this the largest cow-testing association, but it is one of the oldest to continue in successful operation. It was started 12 years ago, and now has a successful breeder as its secretary and manager. Three testers are employed—one of whom has been acting in this capacity for eight years, another six, and another four years.

The history of this association gives ample evidence of the value of cow-testing associations in developing the dairy industry. The report shows that 4,014 cows finished the year's work with an average lactation period of nine and one-half months and with an average butter-fat production of 334.03 pounds per cow. There are but few associations, dairy specialists of the department say, that equal this average production, and none that can approach it in number of cows and height of production.

Seventeen herds in the association averaged from 400 to 495.76 pounds of butter-fat per cow; 19 averaged from 350 to 400 pounds; 38 averaged from 300 to 350 pounds; 23 averaged from 250 to 300 pounds; and 6 averaged from 213 to 250 pounds. It is interesting to note that the 6 low herds had been on test for the first time and the owners had not had a chance to cull out and breed up their stock.

The high cow of the association produced 728.95 pounds of fat; 17 cows in the association produced over 600 pounds of fat; 98 over 500 pounds; 628 over 400 pounds; and 1,541 over 300 pounds. The majority of the cows in the association are grade, and their large production is directly traceable to the high-class purebred sires that have been used by the members of the association and to the raising of heifers from the good cows found by the testing association work.

In 1909, 581 cows in this association finished the year's work with an average production of 251 pounds of fat. Last year, the report shows, the average of 4,014 cows was 334 pounds, a difference of 3 pounds of fat per cow. Based on the number of cows finishing last year's work, this difference meant a total of 333,162 pounds of fat, which, at the price of 70 cents per pound, the average paid Humboldt County dairymen in 1920, amounts to $233,213.

REAL MISSIONARY WORK BY PREACHERS FOR BETTER SIRES

The message that better sires offer an effective way of obtaining better live stock of all kinds is to be carried into rural districts of the South by more than 5,000 country pastors. In accordance with a request from the board of missions of the Methodist Episcopal Church, South, the United States Department of Agriculture has supplied the rural survey secretary of the board with the necessary information.

A stereopticon lecture based on a set of 70 lantern slides prepared by the Bureau of Animal Industry is to be used as a part of the work. "We feel that we can be of material assistance to you," the rural survey secretary of the board stated to the department, "in carrying your message to the people who need it most."

PIG-CLUB BOYS MAKE GOOD SALES OF PUREBRED SWINE

County agents in the Southern States report excellent work with pig-club boys. A Texas boy sold 6 out of a litter of 8 for $25 each, and another boy has 8 out of a litter of 9 spoken for at the same price. Another Texas boy sold his pigs for $425. The sow cost $150 a year ago. A county agent in Alfalfa County, Okla., found considerable difference in the weight of the boys' pigs, due to the manner in which the pigs were fed and the kind of shelter they had. The ones which made the greatest gains had clean pens and warm beds at night. From 200 pounds to 362 pounds was the range in weight. A club girl in Oklahoma raised a fine boar for which she received $100 at two months of age.

Meat Trade Makes Use of Government's Better-Sires Posters

Copies of the Government poster, "Purebred Sires and Herd Improvement," printed in colors, is to be posted widely in the offices of live-stock commission firms and in establishments of slaughtering packers. Although the "Better Sires—Better Stock" campaign, of which the poster is a part, is conducted largely by educational workers, the business side of live-stock improvement is more and more becoming recognized.

The quality of meat animals, the dressing percentage, size, and early maturity—all of these important factors in the business depend largely on the animals' breeding. The poster shows clearly that when purebred bulls are bred to scrub cows the third generation of offspring carries only one-eighth scrub blood and by the fifth cross the native scrub stock is graded up to thirty-one thirty-seconds full blood. The Institute of American Meat Packers is cooperating in the distribution of the posters among the meat trade.

STUDIES ON FEED AND LABOR COSTS OF PRODUCING MILK

Dairymen throughout the country should be interested to know how many pounds of grain, hay, and silage, and how many hours of labor it takes to produce 100 pounds of milk in the different dairy sections of the United States. The Bureau of Animal Industry, U. S. Department of Agriculture, began a series of studies in 1915 on groups of dairy farms to obtain accurate information of this kind.

The results are shown for southeastern Louisiana in Department Bulletin 955. The figures for northwestern Indiana are contained in Department Bulletin 858; North Carolina and western Washington in Department Bulletin 919; and for Vermont in Department Bulletin 923, which may be purchased from the Superintendent of Documents, Washington, D. C., at 5 cents the copy. The various tables are based upon figures obtained during a two-year study, and weighted averages of the records were used whenever they would express the results more accurately. The surveys include also an inventory of dairy buildings, live stock, and equipment used.

Saidy-Date Offshoots Imported from Egypt To Be Propagated at Indio, Calif.

In its efforts to encourage the establishment of a commercial date industry in the desert valleys of the Southwest upon an economically sound and enduring basis, it is the policy of the United States Department of Agriculture to aid in the introduction of those Old World varieties of dates which in actual test in this country have been found best suited to American conditions. The fact that varieties of this fruit can not be propagated by budding or grafting like other tree fruits, and can only be multiplied through offshoots, of which the tree produces but a limited number during the earlier years of its life, makes the prompt availability of an adequate stock of each desirable variety a matter of vital importance. The problem is still further complicated by the fact that so far as known all Old World date palms of the varieties desirable to introduce are infested by one or more destructive scale insects, rendering it impossible to secure clean offshoots for introduction.

Sent Special Agent to Egypt.

In the spring of 1920 Prof. S. C. Mason, of the Bureau of Plant Industry, was sent to Egypt by the department to secure offshoots of the Saidy date. About 1,000 offshoots of this variety were secured from the Libyan desert and about as many from the Nile Valley near Cairo. About 800 other offshoots, largely of the Hayany variety, were also secured in the Nile Valley.

All of the offshoots reached California late in August and were set out in the offshoot-rooting houses of the Government date garden at Indio, early in September, 1920. Many of these offshoots have already struck root and are nearly ready to set out in permanent orchard form. None of these, however, can be distributed to date growers because of infestation with two dangerous scale insects—the Parlatoria scale and the Phœnicococcus scale—and under the regulations of the Federal Horticultural Board they must be kept in permanent quarantine through a long period of years to insure the destruction of the Parlatoria scale and the control of the Phœnicococcus scale.

To insure the most rapid propagation of the Saidy variety in order that clean offshoots grown in this country may be available to date-orchard planters as promptly as possible, and at the same time protecting existing date plantings against the possibility of infestation with these dangerous scale insects, a contract arrangement has been made for the growing of a considerable number of these imported offshoots under conditions which will insure the carrying out of the quarantine regulations and the distribution of clean offshoots when produced by these mother palms. The contract covers the entire period of offshoot production of these imported palms, estimated at from 15 to 20 years. These will be placed with the Gillette-Rosenberger date gardens, a commercial date-growing establishment owned and operated by Mr. King C. Gillette and Mr. T. H. Rosenberger, who have a tract of land suitable for such a cooperative quarantine garden located near the Government date garden at Indio, Calif. Only the Saidy offshoots not needed to stock the department gardens are placed with them.

Offshoots to be Sold at Reasonable Prices.

The offshoots are to be handled by the contracting growers under the supervision of the Department of Agriculture, in complete accordance with the quarantine regulations of the Federal Horticultural Board and of the State of California.

Similar arrangements are being made for the planting in a permanent quarantine orchard of a part of the other imported offshoots of the Hayany and Amry varieties imported last year. They also will be propagated under terms which will insure the sale of the offshoots produced by them at very reasonable introductory prices to bona fide date growers.

The Hayany and Amry varieties are of particular interest in Arizona, where the Hayany in particular has been found to succeed very well.

Additional details regarding the handling of the department's last introduction of offshoots from Egypt can be had upon application to the Office of Crop Physiology and Breeding Investigations, Bureau of Plant Industry, in which the investigational work required in the establishment of commercial date culture in the United States is conducted.

CURED SWEET POTATOES BRING BETTER PRICES

Curing of sweet potatoes to prevent spoilage is giving good results in Hempstead County, Ark., under the instruction of the county agent of the United States Department of Agriculture and the State Agricultural College, who reports a price of $1.50 per bushel on the first car of sweet potatoes shipped from the new curing plant of the Farmers' Potato Curing Co., which was built last fall. At digging time the farmers could have sold these potatoes on the local market for 50 or 60 cents per bushel. In loading the car it was found that the potatoes were keeping in good shape. Less than 2 per cent of them were found to be damaged.

In Jefferson County, Ga., the county agent says 500 bushels of sweet potatoes were shipped from the curing house at $1.37½ per crate, f. o. b. Louisville, and less than 1 per cent were damaged. The Lenoir County, N. C., agent reports visits to two potato-storage houses. One contained 800 bushels and the other was a 500-bushel house. Both storage men said they had less than 1 per cent of bad potatoes. In Louisiana, St. Landry Parrish, 1,100 barrels of kiln-dried potatoes sold at $4.50 per barrel. Another man in the same district was unable to sell his potatoes, which were not kiln-dried, for $3. The first man remarked after he had made the sale, "No more cotton for me." In Allendale County, S. C., the county agent stated that cured potatoes were furnished to a large hotel all through the fall and gave entire satisfaction.

NEW METHOD OF MAKING A LAWN IN A FEW WEEKS

A new, quick method of establishing stands of sod on lawns, and more especially on golf greens where the grass gets severe usage, has been worked out by botanists of the United States Department of Agriculture. Bent grasses, which grow from runners, are principally used in the method. A quantity of healthy sod is stripped at a depth of approximately 1½ inches, which gathers in most of the grass roots with as little dirt as possible. The sods are run through a feed cutter which is so arranged as to slit them into ribbons about 2 inches wide and the ribbons are shredded by hand, leaving a mass of grass roots. These roots are sowed broadcast on the ground, which has been carefully prepared by plowing and harrowing; and if a golf green is desired it is usually covered about an inch deep and rolled.

For ordinary lawns it has been found sufficient to broadcast the sod shreds and harrow or disk them in. By this method a good stand of sod has been obtained in as short a time as three weeks. The method has been used on golf courses throughout the country. A green of the public golf course in Potomac Park, Washington, D. C., prepared in this manner, is regarded as one of the finest in the country.

Many Communities Join in Combat to Eliminate Undernourishment of Children

The story of a Nation-wide effort to eliminate undernourishment in growing children is told in the scrapbook of a milk specialist from the United States Department of Agriculture, who has cooperated during the past two years in more than 40 milk campaigns held in cities and rural districts throughout the United States. All of these campaigns have been held in the interest of better health for children, and in every case where a milk campaign has been put on there has been an increase in the consumption of milk, which has amounted to as much as 30 per cent in some cities. What this means to the health of the country is hard to measure, for milk campaigns put on in one city have resulted in more campaigns in neighboring cities and rural districts, and the milk week has grown into a lengthy education on the food value of milk.

Movement Spreads Rapidly.

The milk campaign week was started in Connecticut in 1918, when six cities, the first of which were Hartford and New Haven, organized to combat undernourishment among their school children.

The movement spread to Rhode Island, where Newport took up the work, and this campaign was followed in rapid succession by campaigns in four New Jersey cities. Boston then went a step further, and put on a 12 months' campaign. Among other cities which have taken up the work are Detroit, Pittsburgh, Kansas City, Topeka, Davenport, Iowa City, Akron, Spokane, Seattle, and Madison. Other cities have planned campaigns; and Iowa and Kansas put on a State-wide campaign for two years, with splendid results.

Shows Necessity for Milk.

What is behind this great interest in milk? Undernourishment. There are many children that are underweight and undernourished. A survey of 10,000 Chicago school children showed that 40 per cent were 7 per cent underweight, and the investigators were surprised to find that of those underweight 57 per cent were from comfortable homes in the residential section, and only 16.2 per cent were from the stockyards district. "This fact," says the milk utilization specialist, "demonstrates the necessity for teaching more about the value of foods, for the fault here was not poverty but ignorance of the necessity of certain foods for growing children."

A survey conducted in New York showed that from 1914 to 1917 the percentage of undernourishment had increased from 5 to 21 per cent, and had accompanied a decrease of 25 per cent in milk consumption.

Undernourishment is not confined to the cities. In one of the counties in the richest agricultural section of Kansas it was found that of 639 children in 30 school districts 140 were at least 10 per cent underweight, and only 42 per cent of them used milk every day. Also, in three townships in Iowa 51 per cent of the children were underweight.

Conditions Must Be Right.

"From figures like these a city may gauge the necessity of a milk campaign," says the milk specialist. "A campaign is never conducted by the Dairy Division of the United States Department of Agriculture unless there is a local feeling that it is needed. It is then made certain that the milk is pure and wholesome, that the supply is adequate, and the price reasonable to the producer, the distributor, and the consumer. In such campaigns the Dairy Division cooperates always with the State agricultural college, and the college gets the cooperation of the local agencies.

"Two important reasons for undernourishment in children are poverty and lack of understanding of the nourishing properties of certain foods. What milk campaigns do to teach the value of milk for the growing child is that much added to the general progress of child welfare."

Value of Milk in the Diet.

The value of milk in the diet has been shown very strikingly in the milk-feeding demonstrations cafried on in the schools. In Kansas City, for instance, a survey in a certain school district in May, 1919, disclosed that 37 per cent of the children were undernourished. They were given a school lunch of milk and graham crackers, and by September the percentage of undernutrition had fallen to 25 per cent. The following March only 3.7 per cent were below weight, and it was expected that all would be brought up to normal in a short time. Similar results have been obtained in other cities.

The value of milk for older children and grown-ups is brought out in a tribute to milk from the president of a women's college in the South: "For 67 years we have never had a death of a boarding-school student. We have our own herd of dairy cows. What milk we can not use we sell. We went through the "flu" epidemic safely by keeping the dormitories heated evenly, and then feeding milk."

RED AND WHITE OAK WOOD DISTINGUISHED BY PORES

White oak wood has smaller pores in its summerwood than red oak, and this fact is now used by the Forest Products Laboratory, Madison, Wis., which is under the supervision of the Forest Service, United States Department of Agriculture, to separate the wood of the one group from that of the other.

Over 50 species of native oaks assume the proportions of trees and about 25 are used for lumber. After the oaks are cut into lumber there is no means known to the Forest Laboratory by which they can be identified as to exact species. By examination of the wood alone, however, it has been found easy to separate the oaks into two groups—white and red. For most purposes, fortunately, it is not necessary to classify them further.

A ready but not absolutely reliable means of distinguishing the white oak from the red oak is the color of the wood. Red oaks usually, but not always, have a distinguishing reddish tinge, especially near the knots. The wood of the white oaks generally is a grayish brown, but occasionally a reddish tinge is found in the lumber. For accurate identification it is necessary to examine the pores of the wood. These are found as tiny holes on a smoothly cut end surface. The largest pores are visible to the naked eye. The pores are not of uniform size throughout each growth ring, but are considerably larger in the wood formed in the spring, decreasing in size rather abruptly toward the summerwood.

To determine whether a piece of oak belongs to the white or the red oak group, the end of the piece is cut smoothly with a sharp knife across several growth rings of average width. With the aid of the hand lens the small pores in the dead summerwood are examined. If the pores in this part of the growth ring are plainly visible as minute, rounded openings, and are not so crowded but that they can readily be counted, the wood belongs to the red oak group. If the pores in the summerwood are very small, somewhat angular, and so numerous that it would be exceedingly difficult to count them, the wood belongs to the white oak group.

The white oak group includes true white oak, swamp, bur, cow, post, overcup, and chestnut oak. The red oak group includes true red oak, yellow or black, scarlet, spanish, Texan, black jack, water, willow, and laurel oak.

Stem-End Rot of Watermelons in Transit Preventable by Simple Treatment

It is easily possible to prevent stem-end rot of watermelons in transit by treatment at time of loading, say specialists of the United States Department of Agriculture. Losses in watermelon shipments from Georgia and Florida last year were extremely heavy, according to reports received at the Bureau of Markets through its inspection service. By far the greater part of the wastage was due to stem-end rot, though the disease is subject to control by a simple method of stem disinfection at loading time.

Disinfect Stems with Bluestone.

Properly applied, the treatment consists of two steps—recutting the stem of the melon at time of loading in the car, so that a firm green surface may be obtained, and application of a homemade or commercial disinfectant paste to the freshly cut stems. This should contain 6 per cent bluestone as a fungicide. Such a paste is now available on the market. The treatment is not effective when melons are loaded with dead stems, as the fungicide is of service only when it forms a barrier between the freshly cut surface of a healthy green stem and infection from without. As the melons are packed in the car, have the stem ends turned outward while a second man or boy with a sharp knife cuts off a portion of the stem and with a small brush applies a dab of paste to the fresh surface. One man can accomplish this treatment without interfering with the speed of loading and can keep up with two packers. A quart of paste, costing only a small amount, will be needed for each car.

This treatment, first recommended in the four Southeastern States in 1919, was fairly well applied in Georgia and Florida that season. At that time the United States Department of Agriculture was able to maintain agents in the field for the purpose of demonstrating the correct method of disinfecting the stems, and the results of the work accomplished were very satisfactory. Last year, however, owing to lack of appropriations, it was not possible to keep men in the field for purposes of instruction and research, with the result that progress in preventing losses from this disease was greatly retarded.

This year the State colleges of agriculture at Athens, Ga., and Gainesville, Fla., are prepared to give advice and assistance to the melon growers in the application of the stem treatment. As a contrast to the many reports received last year of cars containing wastage amounting in many instances to as much as 50 and occasionally 100 per cent of the load, the Department of Agriculture has on file a series of reports obtained in 1919 on cars shipped from stem-end-rot territory and treated under supervision of an agent in the field with average losses of less than 2 per cent.

Additional Precautions.

Field sanitation is an important practice. All rotting melons should be collected at least once a week and removed from the fields, after which the carts used for hauling should be washed with a 2 per cent solution of bluestone. Melons should be carefully handled to avoid any possible bruises or cutting, especially the slashing of fruits that often occurs when cutting them from the vines. The cutters must never touch or cut into a decayed melon. Knives may be disinfected with a 2 per cent formaldehyde solution.

Melons should be cut with as long stems as possible when harvested, and they should be loaded within a few hours after cutting. Before loading, the car should be thoroughly cleaned and provided with bedding of dry straw. The sides of the car should be lined with some heavy paper, and care should be taken to see that the ventilators are opened. Attention to details of handling, loading, and treating melons will materially reduce losses in transit from stem-end rot, and it is evident to anyone familiar with conditions at the market that these losses must be reduced if the farmer is to continue to have a market for his produce.

SOUTHERN BOYS AND GIRLS ACTIVE IN CLUB WORK

Boys' agricultural clubs in the South reported growing products in 1920 valued at $561,609. This result was shown by 8,525 members actually reporting, but the enrollment was nearly four times as large. Boys engaged in corn growing reported 284,752 bushels for 4,900 members, worth at market quotations about $292,939. The cotton clubs, with 975 members reporting, grew cotton worth $83,062, and 191 boys growing wheat produced 24,730 bushels, worth at that time $48,900.

There were 10,006 boys actually reporting in the clubs given over to pigs, sheep, beef cattle, and calves, dairy cattle, poultry, and miscellaneous items, and the annual report credits them with producing $757,279 worth of products.

Negro boys reported their work more regularly than the whites, and made a very creditable record for the year. Their agricultural products were worth $296,041 for 3,847 members, and 2,172 boys produced pigs, sheep, beef animals, dairy cattle, poultry, and miscellaneous items worth $153,405.

There were 5,278 girls' clubs, with an attendance at meetings of 282,600. Scholarships at normal or agricultural schools or colleges were won by 360 girls, and 1,734 girls paid all or part of their school expenses for the year with money earned in club work. The annual report shows that 15,885 girls engaged in tenth-acre gardening and canning, and produced more than 9,000,000 pounds of food. They sold 4,750,132 pounds of fresh fruit and vegetables, and the value of this fresh stuff sold or used in their homes was placed at $238,647 at current market prices.

Southern club girls put up 1,738,463 quarts of fruit, vegetables, or meats in tins, and 1,161,936 quarts in glass, with a total value for all tenth-acre products of $899,656. Exclusive of all tenth-acre gardens the girls of the South raised 3,597,497 pounds of vegetables valued at $278,349. There were 32,386 girls in these clubs, of whom 12,748 qualified as home demonstrators for local work before the year ended.

These girls did much more, however, than attend to gardening and canning. They raised 480,991 chickens; sold 331,177 pounds of poultry, and contributed 110,180 pounds for home use. They preserved in water glass 60,704 dozen eggs and used 110,934 dozen at home; sold 15,187 fowls for breeding purposes and kept 97,355 standard breds at home. More than 1,100 girls qualified as buttermakers in the year, and 1,088 made cheese, a growing industry in the South.

Individual reports of some of the boys show commendable industry. Leo Davenport, 15 years old, belongs to a poultry club at Minden, La. The total receipts for this boy's work for the year was $420.75, produced at an expense of $103.40, leaving net returns of $317.35. The average net returns reported by two other boys in the same parish were $167.57.

A club girl near Pawhuska, Okla., sold more than $600 worth of tomatoes in 1920. She had her tomatoes on the market before anyone in the district, and received 15 cents a pound for the first 800 pounds. This girl is working to win a scholarship at the agricultural college, an ambition she conceived during a visit to the institution as part of her club work.

Strive to Make Amaryllis Popular— A Plant Easily Grown by Amateurs

The beautiful amaryllis is something of an aristocrat among flowers and is not well known by the country at large. While at the present time the amaryllis is not extensively handled in this country, either by florists or as a house plant, it lends itself readily to such use. It is not difficult to hybridize, and, while it requires 18 months for the seedlings to come into bloom, the display in the greenhouses of the United States Department of Agriculture, when nearly 1,500 plants were in flower, amply proves the possibilities both as regards numbers and variety.

Grow Seedlings from Crosses.

In England this plant has for years been much more popular than here and the breeders and fanciers often secure prices which to the amateur seem exorbitant, yet good sorts can be had around $2 per plant in the English trade. But the amateur will get a large part of his satisfaction out of growing this or any other plant that lends itself readily to hybridization by growing seedlings from crosses he has made between parent plants of his own choosing. The element of chance which is a factor in such work gives zest and encouragement.

Even a small collection that is handled the same as dahlia bulbs by planting out in May and lifting in late September will give a rich reward for the trouble. Plants handled in pots plunged in a border during the early summer and dried off in the autumn and stored in a frost-free cellar during early winter may be brought out and flowered in April. This is a plan that has been followed by flower lovers for many years with satisfaction to themselves and to their friends.

Besides the methods mentioned, which apply particularly to the northern tier of States, the amaryllis may be grown the year around as an outdoor plant in Florida, southern Texas, and in southern California. By the three methods described, namely, growing in borders, in pots, or as an outdoor plant, it can be flowered throughout the entire extent of the country. The least satisfactory method is that of handling it in borders, but as a pot plant plunged in sand or cinders during the summer and dried off in the autumn it gives great satisfaction as a house or conservatory plant when brought into flower in April or early May.

Reds Are Most Common.

One of the features to strive for in the production of hybrids is to secure plants with large flowers of uniform color throughout. As a rule the colors of the amaryllis which are most frequently met with are shades of red. Departures from these colors, some of which are not attractive, are desirable; and the amateur or professional should strive to get satisfactory shades of pink and of white, which work in England and in the United States indicates is possible.

Pure white flowers are very rare, but have been produced. Good pinks are almost equally rare, but the work of the specialists of the Department of Agriculture clearly shows that flowers with such colors are within the range of the horticulturist. It is the thing which is unusual and difficult of accomplishment which really makes the striving worth while. The amaryllis offers such a field for the venturesome plant breeder.

SEES NEED FOR TRADING STANDARDS OF LINTER COTTON

With the exception of Sea Island and Egyptian cotton, seed of practically all varieties of cotton bear two commercial types of fibers on their seed coats—a fiber suitable for spinning purposes and a short fiber or fuzz closely matted about the seed. Fiber of the first type is removed and baled at the gins and constitutes the cotton of commerce. The other type, or fuzz, together with such of the first type as may escape removal at the gins, is removed by a second process usually performed at the oil mills in the cleaning and preparation of the seed for crushing and constitutes what is known as "linters."

So far no steps have been taken toward the standardization of linters, say specialists of the United States Department of Agriculture. When, during the recent war, the United States Government commandeered all linters, a great deal of difficulty was experienced in many quarters in establishing values for the various qualities, this naturally leading to disputes and controversies. It would seem, therefore, that inasmuch as the quantity of linters and their money value now are matters of such importance, steps should be taken to establish some workable trading standard, especially now that linters are used less extensively for explosives and are on the market for other uses. Unless this country has some uniform guide by which to trade in linters commerce in that commodity will be greatly hampered.

There is no question, the specialists say, that the situation with reference to the handling and marketing of linters can be materially improved, not only through establishing standards but also through the utilization of this fiber in the manufacture of such articles as are now being manufactured from other materials, particularly with reference to wood pulp. From an economic standpoint, unless some means of further utilization of linters is found, the result may be a repeated overproduction of this stock each cotton season, leading ultimately to a huge waste of the material. However, it is understood that recent experiments in the manufacture of high-grade paper from linters have proved successful, and that this new industry bids fair to furnish in the future an outlet for large quantities.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended June 11, 1921:

The Cut-Over Pine Lands of the South for Beef-Cattle Production. Department Bulletin 827.

Wild Ducks and Duck Foods of the Bear River Marshes, Utah. (Professional Paper.) Department Bulletin 936.

The Influence of Calcium and Phosphorus in the Feed on the Milk Yield of Dairy Cows. (Professional Paper.) Department Bulletin 945.

Methods for Close Automatic Control of Incubating Temperatures in Laboratories. (Professional Paper.) Department Bulletin 951.

Commercial Utilization of Grape Pomace and Stems from the Grape-Juice Industry. (Professional Paper.) Department Bulletin 952.

The Range Crane-Flies in California. Department Circular 172.

Linters. Department Circular 175.

The Present Status of the Tobacco Blue-Mold (Peronospora) Disease in the Georgia-Florida District. Department Circular 181.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publications desired. For example: Farmers' Bulletin 1187; Department Bulletin No. 827; Department Circular 172.

Greater Care Necessary in Making Up Fruit and Vegetable Shipping Crates

Important factors affecting the successful use of crates in marketing fruits and vegetables were carefully studied by a specialist of the Bureau of Markets, United States Department of Agriculture, during a recent trip through a part of the South, particularly the orange-producing region. The first of these is the need of manufacturers making a more rigid inspection of materials used.

Cull Out Defective Material.

While most manufacturers make an effort to have their stock inspected and to use only good material, in some cases this attempt is frustrated by the failure of the workmen to understand and appreciate the ideal which is guiding his employer. Many crate-mill employees seem to cherish the old idea that because the crate is a gift package it should be made as cheaply as possible, using any sort of material so long as there is a chance of its holding together, thus reducing the cost to the grower and shipper. Under present traffic conditions such a method is the worst one to follow if the best interests of the grower, and therefore of the manufacturer, are to be considered. The manufacturer should endeavor to instill in his employees the importance of culling out inferior and defective material.

Attention should be given also to the work of the automatic nailing machines. These are not invariably accurate, nor is it always possible for the manufacturer to obtain the nails best adapted to successful operation of the machines. Consequently, in nailing panels to headsticks in the manufacture of panel-end crates some nails may be missed and inspection is necessary to cull out the defective pieces and put in the missing nails.

The Grower's Responsibility.

The crate manufacturer having done his part in providing materials free from defects, the grower or shipper should see to it that the crate is not spoiled in being made up in his packing house or field.

Growers and shippers should remember that the nailing together of the crate is one of the biggest factors in determining whether the container is to be strong and substantial or weak and productive of damage claims. Cement-coated nails, not less than fourpenny in size, should always be used, and care should be taken to see that they are properly spaced and placed. Stricter supervision of the nailers or inspection of their work would seem to be necessary.

Greater care is perhaps necessary in making up crates for express shipments than for car-lot freight shipments, due to the more frequent handling they must undergo. For either method of shipping consideration should be given to methods of construction which will lessen the possibility of loss. An instance of this is the use of the "web" or cleated side for celery crates. The slats are stapled to the cleats in the factory, making but one piece to each side to handle in the field instead of three. It also insures even spacing of the slats and gives an extra thickness for holding the nails, thus counteracting any tendency of the slats to split and come away from the nails.

Some celery growers are experimenting with a patent crate which is reinforced with wire around the ends and the body of the crate. In actual use the end wires were twisted together to close the package, it being found impracticable, owing to the height of the celery, to twist the center wires together. There is no doubt of the strength of this type of crate.

Need of Cooperation.

Whatever the type of crate used, it is the duty of the manufacturer to supply good material, accurately cut and properly put together. This much the purchaser of crates should demand and should expect to pay for. Having secured it, he should do his part by seeing that the crates are made up in a workmanlike manner, and, after packing, that they are properly closed and fastened for shipment. By such cooperation manufacturers and growers can feel better assured that the crate will measure up to the ideal of a fruit and vegetable package; that it shall carry the commodity intact from the grower through the wholesale market to the retailer.

FIXING UPON FAIR PRICES FOR EGGS BY PARCEL POST

As the object of parcel-post dealing is to obtain slightly increased prices for the producer and better products at the same price, or the same class of products at lower prices, for the consumer, the question of arriving at prices fair to both is important, and also difficult, say marketing specialists of the United States Department of Agriculture.

It is not likely, at least not for some time to come, that eggs will be marketed so largely by parcel post that the ordinary market quotations can not be depended upon in arriving at prices.

It should be comparatively easy for a producer and a consumer to agree upon stipulated market quotations as the basis for determining prices. A consumer may desire 5 dozen eggs a week, the price to be an agreed-upon figure above the wholesale quotation for the best grade of eggs on the market that week. The necessary relations in this matter can be maintained only by scrupulous honesty and mutual trust.

The nature of the agreement between the producer and the consumer, whether reduced to writing or not, should be made to suit the circumstances and be fair to both. Perhaps the first agreement should be in writing; but later, if mutual confidence and trust have been thoroughly established, the contract may be verbal.

The matter of frequency and method of payment can be arranged in various ways. For the first agreement term, which may be a year or less, cash in advance might be satisfactory, until a definite system of orders and payments is established.

For the reason that eggs are abundant in the spring and scarce in the autumn and early winter, the contract should specify the quantities to be supplied each week throughout the year. The producer making an agreement with a consumer should undertake to replace or allow rebates for eggs lost by breakage in shipping.

MEAT INSPECTION SHOWN IN MOTION PICTURE

A butcher who explains to an anxious housewife why he sells only Government-inspected meats is the central figure of a new motion picture produced by the United States Department of Agriculture, "The Honor of the Little Purple Stamp."

"Having worked in a packing house," explains the butcher, "I realize how strictly all meat is inspected for traces of disease, particularly for signs of tuberculosis or the source of tapeworm." The film goes on to show different steps in the process of inspection—how "suspects" or animals which look as if they might be diseased are weeded out; how the head, internal organs, and carcasses are carefully gone over; how unfit meat is condemned and put in a sealed room. The treatment of such condemned parts

with denaturing material in sealed tanks is shown, also their final destination in the form of inedible fat which goes to the soap factory and as fertilizer. Convincing proof is given that no doubtful meat is allowed to reach the consumer as a result of meat inspection which is carried on by the Bureau of Animal Industry.

The reexamination of "suspects" is shown. The inspection of cured meats, as well as fresh killed, is illustrated from slaughter to shipment in cars. It becomes obvious from the picture that meat goes through rigorous inspection before it is designated by the reassuring honor stamp in purple, "U. S. Inspected and Passed."

The meat vendor explains also to his customer that of the 15,000,000,000 pounds of meat eaten annually in the United States two-thirds is inspected by Government officials. The reason some meat is not inspected is that Federal laws governing foods apply only in interstate and foreign commerce. It is therefore necessary, concludes the film, for the discerning buyer of meat to insist on the little purple stamp, which is her guarantee of disease-free animals fit for food.

"The Honor of the Little Purple Stamp" is one reel in length. It is intended for distribution by the department and cooperating institutions. Interested organizations, such as women's clubs, schools, and chambers of commerce, may, however, borrow the film upon application to the department, and certain authorized persons and institutions may purchase copies of it at approximately the cost of manufacture—about $40.

IDAHO PROPOSES TO ADOPT FEDERAL MARKET GRADES

In the belief that the maximum benefit from inspection service at shipping points can be had only when such inspection is on the same basis as at destination, the Idaho Department of Agriculture proposes to adopt for State use the Federal grades for farm products as rapidly as they are promulgated by the Bureau of Markets, United States Department of Agriculture. The Federal rules, regulations, procedure, and terminology for inspection work will be adopted in order to coordinate in every possible way the State service with the Federal service.

The shipping-point inspection service conducted by the Idaho Department of Agriculture during the 16 months ended December 31, 1920, resulted in the issuance of over 21,000 certificates and the collection of more than $65,000 in fees. The number of car-lot inspections for the more important commodities were: Potatoes, 10,345; apples, 5,368; hay, 3,840; prunes, 1,244; peaches, 123; cherries, 120; pears, 11; lettuce, 3. The charge for inspection is $5 a car for fruits and vegetables and $2.50 a car for hay.

Wild Fowl Need Protection and Suitable Feeding Grounds

Although legislative measures for the protection of wild fowl have multiplied, and have added to the restrictions on hunters, these regulations have not been sufficient to maintain these game birds in their former abundance. Regions that once were the summer homes of myriads of wild ducks have been drained and placed under cultivation, and extensive areas where the birds at one time bred are now populous farming communities. These changes, say biologists of the United States Department of Agriculture, have crowded out the former feathered residents and have served in a corresponding degree to reduce their numbers.

Realization of these facts has led recently to the adoption of other measures to encourage waterfowl. A number of extensive marsh areas have been made permanent refuges under the guardianship of the Department of Agriculture, and many private preserves, some formed by artificial means, have been established where the birds are protected while nesting. In addition, in a number of cases, rigid local restrictions have been placed upon hunters.

As a means of cooperating in such efforts to maintain and increase the number of waterfowl, the Biological Survey of the United States Department of Agriculture has undertaken investigations of the general conditions under which wild ducks live and thrive, coupled with counts of the birds found in areas varying in character. During three summers, field studies were made dealing with wild ducks in the Bear River marshes in Utah, a report of which has just been published by the department in Department Bulletin 936, Wild Ducks and Duck Foods of the Bear River Marshes, Utah.

During the three seasons devoted to this work 12 species of ducks and the Canada goose were found breeding in the region included in the Bear River marshes, which covers an extensive area at the northern end of Great Salt Lake. In an enumeration made during May and June, 1916, of the 11 species of breeding ducks 3,650 pairs were counted, and it is believed that this number represents between 60 and 100 per cent of the total number of breeding ducks occurring there that season. Allowing 5 young reared to maturity as the average for each pair, and considering 1916 as an average season, the bulletin states that, at a conservative estimate, between 25,000 and 30,000 wild ducks, native to the marsh, are to be found there at the close of the breeding season.

It was found that, in addition to the large number of birds reared on the Bear River area, many other ducks came in after the nesting season to remain there until fall. That birds from the Bear River section range widely after leaving these marshes has been shown by records of ducks that have been banded and released there and subsequently were shot elsewhere. Records thus obtained show that birds released near the mouth of Bear River in migration cover the region from Oklahoma to Texas and west to California. The department urges the establishment of a greater number of preserves where wild fowl may breed and rest unmolested and find an ample supply of food.

HOMERS ESTABLISH NEW RECORD.

The homing pigeons, bred and owned by the Bureau of Animal Industry, United States Department of Agriculture, at the Government farm, Beltsville, Md., have established a record during the past three years which stands alone and unequaled. Beginning with 1919, the year in which the loft was established, the Beltsville birds won first and second in the 100-mile and first in the 200-mile young-bird races as well as best average speed in flights of from 100 to 300 miles. In 1920 the birds from this loft won first, second, and third in the 200-mile and first, second, and third in the 300-mile race. In 1921 they won first, second, and third in both the 400 and 500 mile old-bird races, and best average speed of the Washington Racing Pigeon Club and the National City Concourse Association under whose auspices the races were flown.

In 1919 there were 33 lofts competing, in 1920 35 lofts, and in 1921 over 40 lofts comprising the best birds of the best breeders in all of Washington. This record of first and second and first, second, and third in all races from 100 to 500 miles was won separately by individual birds and has never been equaled by any homing pigeon breeder in the District of Columbia or vicinity, which not only proves the superiority of the Beltsville birds, but is a tribute to the ability and untiring efforts of Mr. A. Jacobson, who has full charge of their breeding and training.

RELATION OF DEPARTMENT OF AGRICULTURE TO BUSINESS

(*Continued from page 1.*)

tions in the prices of live stock. He said that our present system of making prices for grains on the various grain exchanges is the best system which has yet been devised; that possibly some time in the future some better system might be discovered, but, until that had been done, we should do nothing to interfere with the orderly and legitimate operation of grain exchanges.

"But it is a matter of common knowledge," the Secretary said, "that around these grain exchanges abuses have grown up which are to the detriment of every legitimate interest. We know that there is manipulation by large operators which at times unfairly depresses the price of grain to the injury of the farmer, and at other times unfairly advances the price of grain to the injury of the consumer. The legislation now being considered is directed toward the removal of these unfair practices."

Fair Prices for Farmers' Products.

The Secretary said that if the law should be enacted and the Department of Agriculture should be required to administer it "it is inconceivable that the department would do anything that would interfere with the legitimate operation of institutions conducted for the purpose of arriving at fair prices for farmers' products."

Referring to the proposed packer legislation, Secretary Wallace said that the business of meat packing is absolutely essential to the continuation of our livestock industry.

"The development of these plants has been a matter of national pride," he continued. "They offer a market for cattle, hogs, and sheep every business day in the year. But their very size has given them such a dominance in the business of killing live stock and marketing meat products that they are, in effect, if not in fact, of the nature of public utilities. It would be greatly to the disadvantage of our agriculture if anything should be done which would impair the efficiency with which these plants are conducted or impose unjust additions to their cost of operation. But the farmer is entitled to know that these plants are operated in such a way as to give him just prices for his live stock, and the consumer is entitled to know that the meat products are marketed at a reasonable cost."

The Secretary declared that if such legislation should be enacted and its administration should be placed under the Department of Agriculture, the law would be administered fairly to all concerned and in full knowledge of the importance of the industry and its necessity to a prosperous agriculture.

Agricultural Exploitation About Ended.

Referring to the need for a closer relationship between agriculture and business, the Secretary said:

"The period of agricultural exploitation is practically at an end and, if production is to be maintained, every effort must be made to put agriculture on a thoroughly sound business basis. In times past those of our farmers who have gotten ahead financially have done so largely through the increased value of their land caused by a growing population. The farmers of the future can not hope to profit largely in this way. If production is to be maintained, the farmer must be able to get prices for his products which will give him a fair rate of interest on the money he has invested and a fair wage for his labor and the labor of his family. Lacking this the farmer will turn his efforts in some other direction.

"Now, if the farmer is to get a fair wage and, at the same time, sell his crops at prices which the people of the country can afford to pay, we must not only increase our production, but we must find better methods of distribution. We must get the products of the farm to the consumer in the city with less waste and at less relative cost. Also must learn how to take some of the speculative risk out of farming.

"In one sense the farmer is the greatest speculator in the world. His business is subjected to risks which he can not insure against. He is at the mercy of the weather. In an hour a hailstorm may completely destroy the results of six months' work. Drought and floods alike reduce his income. He has no means of correctly estimating the demand for the crops he proposes to produce. He can not control production as can the manufacturer. He has nothing to say about the price. What he gets for his crops constitutes his wages, but he does not know until six months or a year after the work is done what his wages are to be. * * * If in times past we had seen more clearly the interdependence of agriculture and business, if we had given the same scientific study to the methods of distribution that we have given to methods of production, it is reasonable to believe that much of the trouble we are now experiencing might have been avoided.

The Beginning of a New Period.

"When we have worked our way through this period of depression and have shaken off the terrible grip of these economic forces which are now causing us so much discomfort we will find ourselves at the beginning of a new period in our national life. Up to the present time this Nation, like Topsy, has "just growed." In the future there must be a more conscious direction of our growth and a much closer coordination of our various activities. The relation between agriculture and business will become more and more intimate.

"The Department of Agriculture, charged with the duty of promoting agriculture in its broadest sense not for the benefit of the farmers alone or even primarily but for the benefit of all our people, may very properly inquire into everything which has a bearing upon our agricultural welfare to the end that our agriculture be put upon a sound and enduring basis which will insure an abundant production of food at prices our consuming population can well afford to pay. Without lessening for a moment our activities in scientific research, our efforts to find cheaper methods of production, our improvement in varieties and breeds, we must give more attention to the problems of finance and of marketing and of everything else which directly or indirectly influences both production and price."

SMALL BRUSH DAMS HOLD SOIL FROM WASHING AWAY

One of the big problems that extension workers are giving their attention to this year is saving soil, according to extension specialists of the United States Department of Agriculture. In many sections of the Central and Western States every effort is being made by extension workers to prevent washing and erosion of soil by building dams or placing brush heaps in gullies. A representative of the department who returned recently from southwestern Nebraska gives the following as an example of what is being done there:

In April, 1920, a county agent assisted in building 19 small brush dams in a large ditch on a farm where large amounts of fertile soil were being washed away. By March of this year the ditch was filled with soil. Following this demonstration many farmers in the neighborhood, who had been watching the outcome of the soil-saving work, built brush dams in washouts on their farms.

The representative reports that in Nebraska, Kansas, Missouri, Iowa, and Indiana the extension workers are holding soil-service meetings and demonstrations, and farmers are being taught to make use of soil surveys.

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URGES STUDY OF ECONOMICS IN AGRICULTURAL COLLEGES

Should Have Larger Place in Institutions of Future, Wallace Says.

Must Not Abate Efforts in Scientific Work nor Search for Better and Cheaper Methods of Production—Period of Agricultural Exploitation at an End.

Secretary Wallace delivered the commencement address at the Massachusetts Agricultural College, June 10. His address, in part, follows:

"We are in the habit of attaching unusual significance to the fiftieth anniversary whether in the life of a man or of an institution. In the case of the individual, we look upon it as marking the half-way place, not in years of life, but of years of accomplishment. In the case of an institution such as this, the first 50 years, in the larger sense, might be looked upon as years of preparation rather than years of fruition; for unlike man, the life of such an institution continues from generation to generation, enriched and enlarged by the knowledge and inspiration of those who have had a part in making it. During this period the ground is cleared, the foundations are laid, the superstructures are built, traditions are formed, experience is accumulated, and the guiding spirit, the soul, of the institution, is created. If these years of preparation have been well spent, if the spirit created is the spirit of service, then friends of that institution can look backward with satisfaction and can look forward with confidence in its ability to meet fairly the tasks which changing conditions may bring.

A Half Century of Development.

"What wonderful extension in the agriculture of the Nation has taken place during the last 50 years. During this period we have possessed the land. These years witnessed the development of the great agricultural empire west of the Mississippi River. In that time our cotton production has increased almost five times; our wheat production about four times; our corn production more than three times; and other crops in like proportion. We have taken up practically all of the easily tillable land of the Nation. It has been a period of cheap food during which the building of cities and the establishing of industrial enterprises has gone forward at a rate never before witnessed in all history.

"In part this tremendous increase in food production was the result of adding vast areas to our cultivated land, but much of it was due to the scientific research and inventive genius of the thousands of young men who got their inspiration and training in this and like colleges. For it is during this period that we have seen the development of agricultural science. The National Department of Agriculture was created; the State experiment stations were established; the extension system of carrying the teachings of the colleges and the dis-

(*Continued on page 7.*)

HARVEST HELP REPORTED ABUNDANT IN WHEAT BELT

Advices received by the Department of Agriculture from its agents in the field indicate that there will be no general shortage of labor for the wheat harvest, and that in some areas there will be a decided surplus.

In Kansas, where the harvest begins about June 15 in the southern tier of counties, the supply of labor is already in excess of the demand. In that State wages for shockers do not run over $3 a day with board and lodging.

In Texas, where harvest is already in progress, there seems to be labor enough to meet all demands, with the possible exception of the Panhandle district. In Texas harvest wages run from $2 to $2.50 a day.

In the northern wheat States the situation has not yet developed sufficiently to make possible reliable estimates as to demands for outside labor, but it seems probable that the labor market will be comparatively easy in most localities, with the prevailing wage not over $3 a day.

WIRELESS MARKET NEWS SERVICE MADE NATION-WIDE

Sending Stations in Nebraska, Wyoming, and Nevada to Be Included.

Market Reports on Live Stock, Meats, Grain, and Potatoes Dispatched Daily—Service Proves Popular and Is Used by Farmers, Newspapers, and Public Agencies.

A system of broadcasting agricultural market reports throughout the greater part of the country by wireless was established June 20 when Post Office Department wireless stations at North Platte, Nebr.; Rock Springs, Wyo.; and Elko, Nev.; were included in the radio market-news service of the Bureau of Markets, United States Department of Agriculture. Agricultural market reports on live stock and meats, grain and potatoes in important national markets have been dispatched daily since April 15 from Post Office Department wireless stations at St. Louis, Omaha, and Washington, D. C., and the expansion is due to the successful operation of the service at these points. The Bureau of Markets also arranged recently to broadcast market reports from Pittsburgh by radiophone.

Get Market Reports Same Day.

For the first time in the history of the country it is possible, by means of the department's radio service, for farmers to keep informed of national agricultural market conditions the same day that business is transacted. Formerly the growers in many sections, now to be covered with the radio news, received their national market news several days late.

Every effort is being made to organize the State and county marketing and extension agencies into an efficient medium for the receipt of the market news and its distribution among the farmers, and marketing interests in several States within the radius over which the reports will be sent are making a careful survey of facilities for receiving and distributing the reports with a view to designating certain official agencies to handle the messages. An ideal situation, say Bu-

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reau of Market officials, would be the establishment of one or more official receiving and distributing points in each county or group of counties covered.

Farmers everywhere are reported to be most enthusiastic over the new service. Many newspapers, public institutions, such as State marketing bureaus, State agricultural colleges, and others, and wireless operators generally have interested themselves in the work, and desire to be of every assistance in getting the market reports to the farmers as promptly as possible. It is expected that the placing of market news in the hands of the farmers shortly after the close of the markets, and during the day's business, will help materially to regulate the movement of farm products to meet the demand, a condition precedent to the stabilization and equalization of prices of farm products.

IMPROVE METHODS OF PACKING EGGS FOR SAFE SHIPMENT

"Handling Eggs for Profit" is the title of a little mimeographed circular issued by the Food Research Laboratory of the Bureau of Chemistry, United States Department of Agriculture, which gives directions and drawings for the construction of egg cases, and outlines methods for packing the eggs so as to reduce loss from breakage while in transit from the producers to consuming centers.

The specialists of the Food Research Laboratory have made a study of methods for packing and shipping eggs in order to reduce the great losses from breakage that have occurred in the past. This work has been done in all parts of the country in cooperation with railroads and with egg shippers. Experimental shipments in different kinds of shipping cases and with the different methods of packing the eggs in the cases have been made and the results compared. An instrument has been devised for measuring and recording the shocks to which cars containing eggs were subjected while in transit.

As a result of these experiments the specialists have recommended methods of packing eggs which reduce breakage to a minimum. These methods have been tried practically under a great variety of conditions, and have been incorporated as requirements in the railroad and express classifications for the transportation of eggs.

Copies of the mimeographed circular may be obtained upon application to the department's Food Research Laboratory, 22 Jackson Place, Indianapolis, Ind.

HARDY VARIETIES MOVE WINTER WHEAT AREA NORTHWARD

Winter Wheat Gives Greater Yields and Matures Earlier Than Spring Varieties.

Profitable Production Depends Largely Upon Choice of Suitable Kinds—Soft Red Usually Grown Although Soft White Sorts Are Popular.

Since the introduction of the hardy varieties of wheat from southeastern Europe there has been a decided northward movement of the winter-wheat area. This movement has been rapid in recent years. The reasons therefor are the generally large yields of winter wheat due, first, to its earlier maturity, thus enabling it to escape hail, hot winds, and disease; second, to its greater drought resistance; and third, to the better division of labor which it allows through fall seeding and earlier harvesting.

The profitable production of wheat in the eastern half of the United States depends to a considerable extent on the choice of the best-adapted varieties. In general, the soft red winter wheats are grown, although soft white winter wheats are popular in the Northeastern United States, especially in New York and Pennsylvania. In the extreme western portion of the eastern area, which is limited on the west approximately by the line of 30 inches of rainfall, hard red winter wheats of the Turkey type are grown. Along the line of 30 inches rainfall there is a transition zone in which hard and soft red winter wheats succeed about equally well.

Better Varieties for Many Farms.

Many farmers are doubtless growing poorer varieties of wheat than they might grow if they knew exactly what was adapted to their localities and farms. The United States Department of Agriculture has just issued Farmers' Bulletin 1168, Varieties of Winter Wheat Adapted to the Eastern United States, which charts localities in which various types of wheat can be grown to advantage, and lists the varieties adapted to each particular locality.

The bulletin suggests that there is a large local demand in New England for wheat as a poultry or stock feed, and it should not be difficult for several farmers in almost every neighborhood to sell all the wheat which they can raise at a good price to their neighbors. Winter wheat will doubtless produce better average yields, where it can be grown, than spring wheat, if proper cultural methods and suitable varieties are used.

Wheat can be improved in yield and in other desirable characteristics by the selection of good heads or good plants from the general field and growing the seed from each individual head or plant in separate rows. Continued selection will result in constantly improved seed. Another method of purifying a variety and increasing the yield is what may be called mass selection. This consists simply in picking out good heads from the field at large, sowing the selected seed in a small area, and reselecting it the next harvest time. The bulletin may be had on application.

STUDENTS WILL STUDY THE MARKETING OF FARM PRODUCTS

A course in research studies in the marketing of farm products is planned to be conducted by the School of Business of Columbia University, New York City, in cooperation with the Bureau of Markets, United States Department of Agriculture during the 1921–22 school year. This arrangement is the probable beginning of a closer cooperation on marketing research between the educational institutions of the country and the Bureau of Markets.

The greater part of the investigational work in connection with the course offered by Columbia University will be conducted from the New York office of the Federal Bureau of Markets located in the center of the wholesale produce district of that city. The course is designed for graduate students who have demonstrated their ability to conduct research studies of an economic nature, and will consist wholly of the collection, tabulation, and interpretation of data gathered from original sources on specific marketing problems.

DISTRIBUTE 130 PUREBRED BULLS.

The first of the "better-sires" sales to be held in Kentucky this year, June 2, resulted in the sale of 130 purebred bulls. These animals are being distributed through the State and will be used for breeding purposes. In describing the sale, Wayland Rhoads, of the extension division, University of Kentucky, states in a letter to the United States Department of Agriculture that "much improvement will come from it."

Notwithstanding the present excellence of much of the live stock in the State, Kentucky farmers are welcoming the opportunity to obtain, at reasonable prices, purebred sires of superior type. Additional sales are to be held during the remainder of the year.

Urge Universal Adoption of American Cotton Standards Before Conference

A strong plea for the establishment of universal standards for American cotton was made before the International Cotton Conference in session at Liverpool, England, by William R. Meadows, of the United States Department of Agriculture. As a means for carrying into effect the plan outlined in his address before the assembly, Mr. Meadows introduced a resolution, in effect, providing—

That the official cotton standards of the United States, with such modifications as may be determined upon, should be adopted and universally accepted as the sole recognized standards of classification of American cotton; and that a committee of influential representatives and recognized experts of the cotton industry be appointed to cooperate with the Liverpool Cotton Association and the United States Department of Agriculture in taking the necessary steps at the earliest practicable date to accomplish this purpose, including the consideration and agreement upon any changes or modifications of existing standards that may be deemed necessary.

Favored by Growers and Exchanges.

Practically all of the American cotton exchanges, he told the conference, passed resolutions indorsing the idea of uniform standards. Many of the leading American cotton firms have expressed similar views. Associations representing producers have likewise favored the establishment of a single set of standards. The American cotton trade almost solidly favors the establishment of uniform standards, he said.

"The simplest way, it seems to me, to bring about the establishment of universal standards for American cotton," Mr. Meadows said, "would be for the leading cotton exchanges of Europe to adopt the official cotton standards of the United States for American Upland cotton as they now exist, since they have already been considered and approved by competent officials of the leading European exchanges. As here used the term 'Upland' includes all growths of cotton within the United States except Sea Island, Meade, and American-Egyptian or Pima. It is thought that there will be no question regarding the United States official cotton standards for determining length of staple as that standard is a basic, descriptive one on which interested parties should find no difficulty in agreeing, inasmuch as character in cotton is not covered by these standards."

Mr. Meadows explained that he meant to imply no criticism of any other standards, and that his recommendation was made solely for sound, practical reasons. They have the sanction and recognition of the laws of the United States, and that Government assures their accuracy, he said.

PLENTY OF EVIDENCE TO SHOW VALUE OF TESTING COWS

There is plenty of evidence on file in the United States Department of Agriculture to convince anyone of the value of cow-testing associations as a means of developing profitable dairy herds. In all these associations records are kept of the amount of milk produced and feed consumed by each cow, and with this information the members of the association are able to weed out the poor producers of the herd to make room for the heifer calves of the cows that give the largest production of milk and butterfat. This practice, together with the use of purebred bulls, is the best and surest way of building up the dairy herd, say dairy specialists of the department.

The Grove City, Pa., Cow Testing Association has developed some high producers by this method, and is an illustration of what it is possible for such an organization to do. In one month recently there were 76 cows in the Grove City association that produced more than 30 pounds of butterfat each. Of this number 62 produced more than 40 pounds. Most of the animals that produced a larger amount were three years of age or over, but there were seven cows under three years that produced more than 40 pounds. The highest yield was 73.42 pounds of butterfat, which was made by a 3-year-old Holstein. The highest yield made by an animal under 3 years was 56 pounds, produced by a 2-year-old Jersey.

KEROSENE USED FREQUENTLY WILL HOLD MITES IN CHECK

Mites, as well as lice, are troublesome and harmful to poultry. They do not live upon the birds like lice, but during the day hide in the cracks and crevices of the roosts and walls of the house and at night they come out and get upon the fowls. Mites suck the blood, and if allowed to become plentiful, as they certainly will if not destroyed, will affect seriously the health of fowls, and consequently their ability to lay eggs. Specialists in the United States Department of Agriculture recommend thorough applications of carbolineum, kerosene, or some of the coal-tar preparations sold for this purpose, or crude petroleum, to the interior of the poultry house.

Commercial coal-tar products are more expensive, but retain their killing power longer, and the cost of treatment may be lessened by reducing with an equal part of kerosene. Crude petroleum will spray better if thinned with 1 part of kerosene to 4 parts of crude oil. Both the crude petroleum and the coal-tar products often contain foreign particles, so should be strained before attempting to spray. One must be sure that the spray reaches all the cracks and crevices, giving special attention to the roosts, dropping boards, and nests, and the treatment should be repeated two or three time at intervals of a week or 10 days.

HOME DEMONSTRATION WORK REVEALS UNTRAINED TALENT

The home demonstration agent touches the life of those she meets and helps far more deeply than appears in typewritten reports about the number present in various classes, the quantities of vegetables canned, hats made, or similar evidences of her activities. In New York State one woman thanks the home demonstration agent of the United States Department of Agriculture and the State agricultural college, because her entire outlook on life has altered, her usefulness to her family has more than doubled, and her service to the community at large has a recognizable value.

This college trained woman had large ideas of making her life count for something, at the time of her marriage to a farmer. Through misfortunes of one kind and another things went from bad to worse on the farm, till they reached a somewhat hopeless situation. The woman wanted to help out financially, but could find very little she was capable of doing. Because she wanted to become a part of her community she became identified with club work. The home demonstration agent found her and asked her to prepare the local reports. These were so cleverly done that they attracted attention. She became a local leader. Then she was given a page to prepare in the Farm and Home Bureau Monthly, and did it so helpfully that she had soon earned over $100 and made a permanent place for herself. She gives all the credit to the home demonstration agent who helped her to find herself.

Weekly News Letter

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John L. Cobbs, Jr., Chief

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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PNEUMATIC TIRES ON MOTOR TRUCKS SAVE HIGHWAYS

Many roads not originally intended to carry heavy traffic were seriously damaged during the period of the war by the impact of heavy motor trucks. The natural result of this was to warn highway engineers of the importance of planning all future roads with reference to the kind of traffic that is likely to use them. The engineers responded immediately by building thicker roads and roads of more durable material; but in the absence of definite knowledge of the probable strength of the impact they have not known exactly how thick or how strong the roads must be made.

Recent tests of the impact of motor trucks made by the Bureau of Public Roads, United States Department of Agriculture, develop the facts that when a solid-tired truck strikes a 1-inch obstruction, the impact may be as high as seven times the load, an average being about four times.

The tests show, however, that the impact depends largely on the kind and condition of the tire. Pneumatic tires cause the least damage to the road surface, the cushion of air reducing the impact so that it is seldom greater than 1½ times the static load on the wheels. Although the impact increases with the speed of the truck, and it is therefore highly desirable to limit speed by strict regulation, the use of pneumatic tires would make higher speed permissible.

The tests of the Bureau of Public Roads have pointed the way to more scientific designing of roads for motor truck traffic, and there is every assurance that engineers will now be able to build roads with practical certainty that they will withstand the blows of heavy vehicles.

Further reassurance in this respect lies in the information that manufacturers are not building as many trucks exceeding 5 tons capacity as formerly. The number of industries in which very large trucks can be kept continuously working is extremely limited, so that the likelihood of forthcoming motor truck damage to public highways is considerably reduced.

PRESIDENT HARDING GREETS GROUP OF CLUB LEADERS

President Warren G. Harding greeted State club leaders from 14 of the northern and western States at the White House, June 9, and expressed his appreciation of what these representative State leaders are doing in assisting boys and girls to carry out agricultural and home making demonstrations. The visit to the White House was arranged by Secretary Wallace, who greeted the State leaders in his office the day previous.

Boys' and girls' club work in agriculture and home economics carried out jointly by the United States Department of Agriculture and State agricultural colleges is meeting with widespread approval, and has developed rapidly. At present there are over 500,000 boys and girls engaged in developing agricultural and home economic demonstration work in 33 northern and western States.

When the Secretary informed the President that these State leaders, who are responsible to a great extent in carrying out this work, were in the city he expressed a desire to greet them.

AUTOMATIC CONTROL OF LABORATORY TEMPERATURE

In the control of incubating temperatures in laboratories, the proper construction of the compartment is of equal importance with that of the controlling apparatus, say specialists of the Bureau of Animal Industry, United States Department of Agriculture, in summing up the results of their experiments, details of which are now published in Department Bulletin 951, entitled "Methods for Close Automatic Control of Incubating Temperatures in Laboratories." With the specially constructed compartment, and with the sensitive temperature-control system described in the bulletin, it was possible to maintain constantly a temperature that varied only 0.1° C. above or below the desired point.

As shown by the plans and diagrams in the bulletin, the walls, floors, and ceilings of the compartment are so constructed as to minimize the transfer of heat from inside to outside of the room, thus economizing on the heat required, and aiding in holding the temperature within narrow limits.

Due to the constant temperature maintained in the incubating rooms, it was found that cultures produced were much better than those produced with the old method of incubation, and no loss of material has been sustained on account of variations in temperature.

The automatic control of temperature within close limits is very important in many lines of commercial work. It is of special importance—in fact, is a necessity—in laboratories where chemical, bacteriological, and physiological investigations are conducted. In many instances success in the production of cultures depends upon the ability to maintain continuously practically constant temperature.

RELIEF OF FARMERS IN THE NORTHWEST ACCOMPLISHED

Work of administering the $2,000,000 seed loan fund, appropriated by Congress for the relief of farmers in the drought-stricken areas of the Northwest, has been completed and the field office established at Fargo, N. D., has been closed. The relief fund was managed by Secretary of Agriculture Wallace through a committee appointed by him for the purpose, headed by Leon M. Esterbrook, associate chief of the Bureau of Markets, United States Department of Agriculture.

Officials look upon the completion of this important work within less than 40 days, with little criticism and much commendation, as very gratifying to all concerned. Records of the committee show that the agricultural bill making the fund available was signed March 3, 1921, a printed copy of the bill not being available to the department until the following week; that the necessary regulations and blank forms were drafted, procedure outlined, and headquarters established in the field; that within 17 days after the committee was appointed the first loan was made, and that up to May 4, when the field work was practically completed, 17,500 applications for loans were received, and 14,000 loans were made, amounting to approximately $1,950,000. The total expense involved, aside from State registration fees, will probably not exceed $10,000.

Farmers in Many Sections Helped Through Cooperative Buying of Supplies

Through cooperative buying farmers in many States are saving money, and, by applying the same system to selling their produce, they are getting better prices for it. Many county agents throughout the country are helping along this work with advice and suggestions. The county agent of Newberry County, S. C., persuaded the farmers to pool cash orders for 400 tons of 16 per cent acid phosphate, to be handled through the Farmers' Cooperative Association. When work was begun on this pool the retail price was $20 or $21 per ton. The price was finally reduced by the association to $17 per ton, delivered on the farmers' wagons at various points in Newberry County. The farmers also saved $10 per ton by home mixing. This one transaction covered 800 tons home-mixed, and represented $8,000 saved through one item.

Encouraging Reports from County Agents.

A wide variety of savings due to cooperative buying are reported by county agents, such as $300 over the retail price on buying a car of cottonseed meal by the dairy farmers of Canadian County, Okla. Sixty-five cents less per bushel on 300 bushels of cowpeas ordered cooperatively saved Lee County, S. C., farmers $195. A cooperative order of fruit trees amounting to 336 trees and costing $105 meant a saving of $162.50 to 23 purchasers in the same county over last year's prices. Eight dollars and fifty cents per bushel for small and sapling clover seed in Frederick County, Md., was the price paid instead of the local retail price of $9 and $10 a bushel. Lespedeza seed was bought cooperatively at 18 cents per pound by farmers in Union County, N. C., at the time it was selling locally at 40 cents.

In Henderson County, Tex., the county agent assisted a company of farmers to prepare a contract with a local nurseryman for the cooperative purchase, on deferred payments, of 7,000 peach trees. There was a total saving on retail purchase of $210. This enabled 100 acres of commercial orchards to be set out. The farmers pledged themselves to cultivate properly, prune, and spray the trees for a period of 4 years and thereafter until the obligation against each farmer's allotment of trees is discharged in full.

UTAH WOMEN SUCCEED IN COOPERATIVE PURCHASING

Cooperative buying among rural women appears to have extended further in Utah than in any other State in the West.

Last year 66 local leaders, advised by the home demonstration agent of the United States Department of Agriculture cooperating with the State agricultural college, made a study of textile standards and of the durability and service of various pieces of equipment used in the average farm home that were available in the local markets.

Groups of women in a number of communities made a study of materials and articles needed in their homes. Then they pooled their orders and placed them with the local merchants or wholesale dealers. A total of 35 per cent was saved on all purchases of supplies and household equipment.

As a result of this activity the merchants were induced to carry a better grade of goods in order to meet the improved demands of the women. A better appreciation of the purchasing power of the dollar was developed in the women by their knowing what, how, when, and where to buy.

One local merchant stated the standard of his own business had been raised fully 50 per cent by the more intelligent buying on the part of the women.

RICE A DELICIOUS FOOD WHEN PROPERLY COOKED

Many Americans do not realize that millions of people eat rice as regularly as Americans and Europeans eat bread. It is a palatable food, too, and when properly cooked it can be combined in many ways with more expensive and highly flavored foods into nutritious dishes. Farmers' Bulletin 1195, Rice as Food, just issued by the United States Department of Agriculture, is filled with directions for cooking rice in many attractive ways not now known to American housewives who are concerned daily with the task of providing properly balanced meals.

Although the Orient produces about 97 per cent of the world's rice crop, the United States now grows more than enough for its present annual consumption. Cultivation began in the Carolinas and Georgia in colonial days, and has now assumed commercial importance in Louisiana, Texas, Arkansas, and the Sacramento Valley in California, and there are scattered plantings in Mississippi, Florida, Alabama, and Missouri. The rice fields here are large, often several thousand acres in extent, and modern machinery much like that for seeding, harvesting, and threshing wheat is used.

The varieties of rice grown in this country rank among the best in the world. Of the many tested here two varieties, Carolina Gold and Carolina White, seem best adapted to the Atlantic coast fields; the Honduras and several Japanese varieties to Louisiana, Texas, and Arkansas; and the Japanese to California. The bulletin, Rice as Food, may be had upon application to the Division of Publications, Department of Agriculture, Washington, D. C.

COMMUNITY CANNING LIKED IN YAKIMA COUNTY, WASH.

There is a live farm bureau and some live-wire project leaders in Yakima County, Wash. With the help of the home demonstration agent, cooperatively employed by the State agricultural college and the United States Department of Agriculture, Mrs. Helen Wells, who is community leader of the food preservation project at Wapato, established a community canning school in her own town. The use of one of the Indian Service bunk houses was obtained and four vats were installed.

A 50-gallon oil tank was converted into a canning tank by the addition of two racks, a cover, and a pressure gauge. Some old tanks were repaired and equipped with drains for washing spinach and other vegetables preparatory to canning. Blanching equipment was also installed in the form of two small vats into which steam could be forced, and 400 cans and a sealer were purchased. With this equipment 4 tons of spinach were canned in 2 days.

INDIAN WOMEN PROFICIENT PUPILS IN DRESS-FORM WORK

An interesting reversal of the usual order of things occurred recently in a county near the "Six Nation" reservation of Indians in New York State. The home-demonstration agent, working cooperatively with the United States Department of Agriculture and the State agricultural college, had been giving dress-form lessons on the reservation. There was no demonstration agent in the next county, and no available local leader could be found, so finally one of the Indian women went over to that county and successfully demonstrated the making of a gummed-paper dress form to her "white sisters."

Chicken Corn, an Unusual Weed, Found Growing on River Lowlands in Kentucky

During the weed survey now being conducted by the United States Department of Agriculture, the county agent of Henderson County, Ky., complained of a sorghumlike plant growing wild on the river-bottom corn land, where it is known as wild corn. He described the plant as a serious weed that annually ruins many square miles of corn land in his county. The weed was said to be difficult to identify while young and growing in the corn rows on account of its resemblance to young corn. During some seasons the plant damaged the corn so seriously that the crops were not even harvested.

First Discovery so Far North.

Specimens of the weed were obtained by the United States Department of Agriculture and identified as chicken corn, scientifically known as *Andropogon sorghum*, var. *Drummondii*, a variety of wild sorghum that closely resembles the cultivated black amber sorgo. The unexpected discovery that chicken corn occurs over an extended area in Kentucky is considered interesting because formerly it was abundant only in Alabama, Mississippi, Louisiana, and western Florida.

Chicken corn has a very interesting history. It was thought to have been originally brought to America by the early slave traders. It became widespread from Louisiana to western Florida, but was previously known to occur in abundance as far north as Henderson, Ky. In the Southern Coastal States it grew as a volunteer crop and was valued by many as a hay plant and for fall pasture. The plant was attacked by the sorghum midge, and as the midge became widespread the chicken corn practically disappeared. Since Henderson, Ky., is too far north for the sorghum midge to thrive, this probably explains why the chicken corn has persisted in the river bottom lands of northern Kentucky.

The method of control practiced by many Henderson County farmers is to delay planting corn until the seeds of the chicken corn have sprouted. The resulting seedlings are killed by cultivation during planting. Since chicken corn is an annual, it should be readily destroyed during the cultivation of the corn. A suggestion that may be of value in getting rid of the weed is to induce autumn germination of the seeds by surface cultivation of the land after harvest with an implement such as the drag harrow. The resulting seedlings will be killed by the frosts of winter.

Extremely Difficult to Eradicate.

A feature that makes eradication of the chicken corn difficult in the bottom lands of the Ohio River is the fact that a large part of the land is subject to floods late in the spring and early in the fall. The flood waters carry a multitude of seeds of chicken corn and spread them evenly over the land. This suggests that the ultimate solution of the problem lies in the cooperation of all the farmers in the river-bottom area troubled with the weed. A united effort should be made during a single season to completely eradicate the plant, so that the flood waters will have no seed to carry.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended June 18, 1921:

Insects Injurious to Deciduous Shade Trees and Their Control. Farmers' Bulletin 1169.

Rice as food. Farmers' Bulletin 1195.

Protection of Mesquite Cordwood and Posts from Borers. Farmers' Bulletin 1197.

Freezing Injury to Potatoes When Undercooled. (Professional paper.) Department Bulletin 916.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publications desired. For example: Farmers' Bulletin 1169; Department Bulletin No. 916; Department Circular 172.

DEMONSTRATION PLATS SHOW BIG RESULTS IN TEXAS

Demonstration plats in Lamar County, Tex., have been found in every instance to yield more than plats worked as the average farmer would work them. The county agent stated that the most striking results of proper farming methods were found on one farm where the farmer's boys had an acre of corn each. They fall-plowed it and used 300 pounds of commercial fertilizer to the acre at a cost of about $5 per acre. They gathered 72.6 bushels per acre of corn.

Across the fence on the same kind of land, prepared and cultivated in the ordinary manner, the yield was 21.4 bushels per acre. On the same farm, after preparing the land properly, 400 pounds of fertilizer per acre was used. Oats were sowed in March. The yield was 85.3 bushels per acre from 20 acres. On an adjoining farm, where oats were sowed broadcast and plowed in without fertilizer, the yield was only 32.9 bushels per acre.

CULLING "SLACKERS" SAVES FEED AND IMPROVES FLOCK

Culling campaigns in Iowa and Idaho have greatly improved poultry methods in the communities where they were carried on. The home demonstration agent, cooperatively employed in Marshall County, Iowa, by the State agricultural college and the United States Department of Agriculture, states that many new poultry houses have been built and many others repaired and cleansed. In one month, with the assistance of a specialist from the State agricultural college, 66 demonstrations of culling were given, 950 persons attended, and 7,326 birds were handled from which 3,003 were culled out. Tuberculosis was found in 43 flocks and cholera in 17.

Thirteen egg records were kept for two weeks before and after the demonstration. The owners found that 2,219 birds laid 5,492 eggs before culling and that after culling 1,527 birds laid 5,379 eggs, which meant that 692 were not producing. The "slackers" were sold for 25 cents per pound, and netted $177.32 for the farmers' wives.

In another county in Iowa during one month 62 demonstrations were held in the culling of home poultry flocks by the home demonstration agent, in which 6,833 birds were handled and 2,000 culled out, at a saving $3,322 on feed. About $1,200 was realized from the sale of these nonproducing birds.

Six home demonstration agents in Idaho counties, report poultry culling with the result of saving $51,366. Interesting reports from the counties include the building of 25 standard-type poultry houses, a tuberculosis eradication campaign, two poultry excursions with an attendance of 170 interested people, and a community breeding circle to demonstrate that systematic breeding tends to eliminate nonlaying hens. Two counties conducted fall culling campaigns followed by cooperative marketing in carload lots. Definite poultry records are being kept by demonstrators in each of the six counties.

New York Lumber Cut Doubled in Value—Increase in Quantity But 15 Per Cent

New York cut 411,000,000 feet of lumber in 1920, valued at $20,000,000, or nearly double the value of the 1918 cut. This remarkable increase was due primarily to the great post-war increase in lumber prices, which reached its peak in March, 1920, together with the fact that the quantity of lumber sawed increased 25 per cent in two years. The number of mills cutting 50,000 feet or more increased from 1,023 to 1,206 in the same period. The average valuation f. o. b. mill of the lumber cut was $48 per M feet—the highest point on record.

New York State Lumber Cut in M Feet.

Species.	1920	1919	1918
Hemlock	74,004	79,062	70,159
Maple	72,724	56,884	46,691
White pine	66,311	49,220	59,842
Beech	43,982	38,463	31,573
Birch	33,221	29,719	21,002
Oak	32,157	24,051	25,405
Spruce	27,823	29,341	25,433
Chestnut	17,730	14,863	14,115
Basswood	14,834	10,983	12,265
Ash	9,363	5,106	8,974
Elm	6,879	5,710	6,291
All other	11,831	14,362	7,091
Total	410,909	357,764	328,841
Total value	$19,799,199	$14,608,932	$10,143,428
Average value per M	$48.09	$40.83	$30.85

This is a preliminary statement of the Forest Service, United States Department of Agriculture, cooperating with the Bureau of the Census, United States Department of Commerce, and with the State of New York, in the census of lumber production in 1920.

Hemlock retains first place in quantity, closely followed by maple. Both hemlock and spruce lumber were less in quantity than in 1919, the decrease in spruce being probably due to the demands of the pulp mills for this species. The only continuous increases for the two-year period are shown by maple, beech, birch, and chestnut, though more white pine and oak were cut in 1920 than in either previous year.

Hemlock and beech are the only species reported at less than $40 per M., and ash is, as usual, the most costly native wood, at $57.74 per M.

Although the peak of lumber prices was reached during the forepart of 1920, the average valuation of lumber in New York increased 15 per cent more in 1919 than in 1920. This was due to the fact that prices were sustained at an increasingly high level throughout 1919, while in the latter part of 1920 they fell far below the peak.

URGES STUDY OF ECONOMICS IN AGRICULTURAL COLLEGES

(*Continued from page 1.*)

coveries of the scientists to the men on the farms was developed. Through these agencies the Nation is richer by thousands of new varieties of plants introduced from other lands or created by scientific breeding.

"We have discovered plants better adapted to our colder climates, our arid regions, our higher altitudes; disease-resistant strains have been developed and drought-resistant varieties. During this period also our scientists have built up practically our entire mass of knowledge concerning the diseases of plants and animals. They have discovered methods of control of these diseases, and insecticides and fungicides. They invented the dust gun, the spray pump. They have eradicated pleuropneumonia, foot-and-mouth disease, and have practically conquered Texas fever, hog cholera, and a host of other diseases which prey on our live stock. They have created the science of bacteriology and of animal pathology. They have organized a protecting and ever-vigilant army around the sources of our food supply.

American Farmers the Most Efficient.

"During this period also the Babcock test was invented and the modern creamery system developed, both of which have contributed so largely to the improvement of our dairy industry. The inventive genius of our people has made it possible for us to increase tremendously the efficiency of the men who work the land, until now it is our proud boast that one American farmer can produce with his own labor from three to five times as much food as the farmer of the older nations. During this period we have seen also the evolution of our great transportation system, which has enabled us to move the products of our farms to the centers of population and at a less cost than ever known. We have seen the building up of the meat-packing industry and similar enterprises which make possible the largest utilization of farm products.

"The life of this institution spans a period of agricultural development wholly unparalleled in history, and our agricultural colleges have played a wonderful part in this development. It was quite natural that the efforts of such institutions should be directed largely toward acquiring and disseminating information which would enable our farmers to produce more and better. It was a great campaign to possess the land and to feed our rapidly growing population. The colleges entered into what was an almost unexplored field. The unknown regions of agricultural science lay before them, and it was their task to do the preliminary work of exploring these regions, blazing new trails, building bridges, and, in short, do just about the same sort of work in their field of endeavor that the pioneer farmer did in his.

"But changing times bring changed conditions. And with changed conditions often we find the need, if not for a redirection of effort, then for the taking on of new and enlarged duties. We seem to have come to a new era in our national life. The present century was not many years old until it became evident to thoughtful men that our growing population was in the way of overtaking our normal production of food. This was evidenced by the gradual increase in the price of farm products during the 10 years prior to the great war. Following 1914, when almost half the civilized world was drawn into mortal conflict, it was natural that the withdrawal of millions of men from productive efforts should result in increased demands for the products of our own farms.

"With the end of hostilities we entered a reconstruction period, and now we are in the grip of an agricultural depression and low prices for farm crops due, in part, to overstimulation of production to meet war's demands and in part to the breaking down of our foreign market upon which we have depended to consume our surplus. When we have worked our way through this trying period, and the world gets back once more to fairly normal conditions, we shall find ourselves confronted with problems of a new sort, difficult problems, which will challenge the ablest minds and which will especially challenge the best efforts of the agricultural colleges, experiment stations, and all other institutions charged with the duty of promoting the food supply of the Nation.

Farmers Require Large Capital.

"Fifty years ago there was land in abundance for all who cared to farm. It could be had for the mere living on it or for $2 or $3 an acre. To-day that land is selling at from $100 to $300 per acre. Fifty years ago the young farmer who had the will to work, who had a good wife, and who had saved enough money,

to buy a team and a few simple implements, could move into the great West with the almost certain assurance that after a time he would own his own farm and home. To-day a capital equal to from $20,000 to $50,000 is required to carry on farming in the great surplus-producing States. The matter of financial credit, therefore, has become one of our most pressing problems.

"With the growth of our cities and our various industries, there came a steadily increasing demand for labor and at wages considerably more than the farm could afford to pay. This has made it necessary to greatly multiply human labor by means of mechanical devices and machinery of one sort or another, and this also required additional capital.

"The problem of distribution is one of increasing complexity and made worse by the increased transportation charges, which, if they continue for any length of time substantially greater than they have been in the past, are likely to make marked changes in our agricultural and industrial map.

"One of the results of the war was to bring home to the nations of Europe the danger of relying too much upon importations of food products. Near starvation imposes a lesson not quickly forgotten. So we see those nations bending every effort now to restore their agricultural production and maintain it on a plane which will enable them more nearly to feed themselves, thus narrowing the market for our surplus. At the same time, we must meet increased competition through the rapid development of the vast agricultural areas in lands which just now are starting well toward the same sort of exploitation of their agricultural resources which we have been going through during the past 50 years.

Manufacturers Want Cheap Food.

"The severe competition which our own manufacturers must meet, due to the efforts of the countries of Europe to pay back to us in goods the vast sums we have loaned to them, will make it necessary for our people to reduce their manufacturing costs as far as possible, and they will expect our farmers to help them in this by furnishing an abundance of cheap food.

"Such conditions as I have mentioned, together with a number of others of almost equal importance, present to us some of the larger problems with which the agriculture of the Nation must deal during the lifetime of the present generation. Looking back we can see now that if our agricultural colleges have failed to measure up to their greatest opportunities of service that failure is due to confining practically all of their effort to the promotion of greater production and giving so little attention to the no less important matter of agricultural economics. During the past five years we have been keenly aware of our distressing lack of knowledge of these great economic forces which exercise such merciless power over those who ignore them or fail to understand them. Had we spent even one-quarter as much time and energy in the study of economics applied to agriculture as we have spent in the study of production, it is not going too far to say that we might have avoided many of the troubles which now beset us.

"As we plan for the future it seems clear to me that, without abating in any way our efforts in the field of scientific research, without slacking in our search for better and cheaper methods of production, it is the clear duty of the agricultural colleges of the country to give more and more attention to study and instruction in the field of agricultural economics. The mission of our agricultural colleges is not to promote agriculture at the expense of industry or commerce, nor to give the farmer the sort of an education that will place him in a position of unfair advantage over other classes, but rather, through more scientific methods of production and less wasteful methods of distribution, enable him to better serve the Nation.

Cheaper Distribution Is Needed.

"The obligation to get food to the consumer with the least waste is just as binding as the obligation to produce that food in the first place. The farmer needs all of the training in production that the colleges can give him, but the most urgent need now is the development of an entirely new realm of organized knowledge of the economic factors which will enable him to cheapen his production and improve his distribution.

"Our period of exploitation is practically at an end. If our production is to be maintained, agriculture must be put on a thoroughly sound business basis. In times past those of our farmers who have gotten ahead financially have succeeded largely through the increased value of their land caused by a growing population. The farmers of the future can not hope to profit largely in this way.

"From now on farming must be conducted as other business, carrying its own expense account from year to year and yielding enough in the way of a profit to justify the enterprise. This means that we must not only increase our production but must learn better methods of distribution, find less burdensome schemes of finance, and, in addition, learn how to take some of the speculative risks out of farming.

"We have come to the time when there should be a more conscious direction of our growth and a far greater coordination of our various activities. The relations between agriculture and industry, commerce and finance, will, of necessity, become increasingly intimate. It is therefore of the greatest importance that our young men in agricultural colleges be given more thorough training in matters of marketing, transportation, finance, and everything else which directly or indirectly has to do with making a thoroughly sound, wholesome, prosperous, self-sustaining Nation."

WOOL MARKETING PLANS DISCUSSED.

Tentative wool grades formulated by the Bureau of Markets, United States Department of Agriculture, together with the policies of the bureau and the American Farm Bureau Federation in regard to the regional and local county wool pools, were discussed at a conference recently held in Washington.

The farm bureau federation favors the plan of regional pools at points of large concentration, and is not convinced, it is said, of the practical value of the tentative wool grades. The conference resulted in a better understanding of the views of the farm bureau federation and of the Bureau of Markets regarding the points under discussion.

The meeting adjourned with the understanding that the Bureau of Markets would arrange for a later conference between representative wool growers, buyers, mills, and organizations of farmers at a convenient date in order to promote a better understanding of the work of the bureau with respect to pooling, grading, and marketing wool.

WHAT IS A BUSHEL?

"Thirty-two quarts make one bushel," recites Young America glibly and positively. But the housewife who has purchased family supplies for years is not at all sure but that this is one of the many rules that have their exceptions. Specialists of the Bureau of Markets, United States Department of Agriculture, say that the heaped bushel varies with the price of the product and the weight bushel varies widely in different States. A bushel of sweet potatoes is 46 pounds in the Dakotas and 60 pounds in Maryland. A bushel of tomatoes is 45 pounds in Oklahoma and 60 pounds in Virginia. A bushel of unshelled green peas is 28 pounds in Massachusetts and 56 pounds in Pennsylvania. The Bureau of Markets recommends the adoption of the "struck" bushel—the Winchester bushel of 2,150.42 cubic inches—as the unit for package standards.

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LARGE PULP-WOOD RESOURCES IN ALASKA'S NATIONAL FORESTS

Urges Development to Increase Supply of Paper Needed in United States.

Under Careful Management These Forests Could Supply 2,000,000 Cords of Pulpwood Annually for All Time—An Abundance of Water Power Near At Hand.

The time seems to be ripe for the extensive exploitation of Alaskan pulp wood, in the opinion of the Forest Service, United States Department of Agriculture. In Department Bulletin 950, entitled "Regional Development of Pulp-Wood Resources of the Tongass National Forest," the successful operation of pulp and paper mills in near-by British Columbia, which has practically similar timber and power resources and comparable transportation facilities, is pointed to as removing the speculative element from the proposed development.

An Enormous Demand for Paper.

The demand for paper, it is said, has increased to such an extent that it has become possible for well-organized and adequately financed companies to operate pulp and paper mills on an extensive scale, particularly for making newsprint. All indications point to a continuance of the demand at prices that should make possible profitable operations in Alaska. New sources are imperatively required, it is said, for the supply of raw pulp wood.

The Department of Agriculture believes that the development of the forest and water-power resources of Alaska is a practicable means of increasing the supplies of newsprint available for the United States and of eventually lessening the paper shortage now so acute. The national forests of Alaska probably contain, it is estimated, 100,000,000 cords of timber suitable for the manufacture of newsprint and other grades of paper. Under careful management these forests can produce 2,000,000 cords of pulp wood annually for all time, or enough to manufacture one-third of the pulp products now consumed in the United States.

Alaskan forests also contain the second chief essential of the paper-manufacturing industry—water power. While no accurate survey of water power has been made, known projects have a possible development of over 100,000 horsepower, and the Forest Service estimates that a complete exploration of the national forests in southern Alaska will disclose their potential horsepower to be not less than a quarter of a million.

Vast Supplies of Raw Material.

"Scarcely any other part of the country," says the department's bulletin, "offers a field for the upbuilding of a permanent pulp and paper industry equal to that afforded by Alaska. It is a virgin field because, in spite of its natural advantages and vast supplies of raw material, economic conditions had not, prior to 1919, become sufficiently favorable to attract capital. For years the Forest Service tried in vain to interest capital in the development of enterprises for paper production in Alaska. Had it succeeded these enterprises would now be in a very advantageous position."

Practically all the timber in southeastern Alaska is under the control of the Government and is within the boundaries of the national forest, the exceptions being reservations and town sites. The

(Continued on page 8.)

USE WATER TO WASH MUD OFF CUTTER BAR OF MOWER

IN some parts of the South the mower is not started until after the dew is off on account of trouble caused by mud clogging the knife. This mud is caused by the dirt from crawfish chimneys mixing with the dew from the grass. After the dew is off, the dry dirt does not do much damage. One large hay-grower keeps a barrel of water and several quart bottles in the field that is being mowed. When the mud begins to dry and clog the knife, the mower is taken to the water barrel and driven in a circle, while in gear, and water is poured from the bottle on the knife and the mud is soon all washed out. This practice allows a full day's mowing. It is one of the suggestions contained in Farmers' Bulletin 987, Labor Saving Practices in Haymaking, which can be obtained free by writing to the United States Department of Agriculture, Washington, D. C.

GEORGE LIVINGSTON RESIGNS AS BUREAU OF MARKETS CHIEF

Has Been Connected Six Years With Department of Agriculture.

Secretary Wallace Regrets That Government Can Not Meet the Competition of Private Enterprise—Asks Mr. Livingston to Continue as Consulting Specialist.

George Livingston, chief of the Bureau of Markets, United States Department of Agriculture, has resigned, effective July 1. In tendering his resignation to Secretary Wallace Mr. Livingston explained that "I must give due consideration to my personal welfare." Mr. Livingston said to-day he had under consideration several business opportunities, but that he had not yet made a decision with regard to them. A successor to the markets chief has not yet been named, and Secretary Wallace has asked Mr. Livingston to continue to assist the department for a few months as a consulting specialist in marketing.

In accepting Mr. Livingston's resignation, which was submitted two weeks ago, the Secretary said he had hoped some arrangements might be made that would make it unnecessary to consider it. He said he recognized the obligation which each man owes to himself and his family to provide for the future.

Salaries Lower Than in Private Enterprise.

"It is a matter of great regret," said the Secretary, "and, indeed, national loss that the Government is, at least for the time being, unable to meet the competition of private enterprise in the matter of salaries and thus finds itself continually handicapped in carrying out its work in the most efficient manner. In view of all the circumstances and of your greater opportunities I am compelled to accept your resignation as chief of the bureau; but if you may find it possible to so arrange your affairs as to continue to assist the department for a few months at least, as a consulting specialist in marketing, I shall appreciate it."

The Secretary said he expressed "what I am sure is the universal regret of the people who have come in con-

tact with your work in the department in your decision to leave us," and he sincerely hoped "that your expectations in your new work will be fully realized and that you will attain the largest possible measure of success."

In his letter of resignation Mr. Livingston said he had been planning for some time to leave the Government service. At the same time he said he regretted to leave because "I feel that the work which is being carried on here is of far-reaching importance to the agricultural interests of the country."

Mr. Livingston terminates six years of service in the Department of Agriculture. For four years he was in charge of the office of grain supervision in the Bureau of Markets. Upon resignation of Charles J. Brand as chief of that bureau he became acting chief, July 1, 1919, and in the early part of 1920 was made chief of the bureau.

AGRICULTURAL INSTRUCTION FURNISHED NEGRO SCHOOLS

Special attention has been given to the study of the educational conditions among negroes, as a result of a cooperative agreement between the States Relations Service of the United States Department of Agriculture and the Federal Board for Vocational Education. It has been realized that the negro teachers are in need of all the assistance possible.

Two courses of study, one in plant production and the other in animal production, were prepared by the United States Department of Agriculture following investigations into the problems, conditions, and facilities of the negro schools. A specialist in agricultural instruction was first detailed to visit the school where agriculture was taught. The methods and practices used by the teachers were observed and available facilities noted. The crops and animals grown in the various States were considered. In the plan of the lessons, seasonal sequence was followed, and no lessons which were not adapted to southern conditions were included.

Further work in connection with these courses of study was done through conferences held at both Hampton and Tuskegee Institutes. A large number of the leading negro agricultural teachers for the South attended. Instruction in the practical application of the two courses was given to the teachers, who are now using them extensively.

The States Relations Service of the United States Department of Agriculture also furnishes other publications, classified lists of material useful to teachers of agriculture, and lantern slides, as requests come in for help in the negro schools.

ROSE LOVERS INSPECT NATIONAL TEST GARDEN

Shows Up Good and Poor Points of Hundreds of Varieties of Roses.

Not Meant for a Show Garden It Disappoints Some Visitors—Varieties Which Have Given the Best Satisfaction and Most Bloom—Climbers of Much Interest.

Thousands of beautiful roses opened for the delight of a group of rose enthusiasts who, on June 2, made the annual pilgrimage and inspection of the Test Rose Garden maintained at the Government experiment farm at Arlington, Va., cooperatively by the United States Department of Agriculture and the American Rose Society. The blighting frosts of March 28–29 did much injury to the roses and, in consequence, the display of bloom was greatly reduced, but in view of the untoward season it was very gratifying to those who have charge of the Rose Test Garden.

A Formal Plan for the Garden.

The garden comprises a plat of ground 284 by 330 feet (2 acres) in size, surrounded by a high wire fence and laid out in regular rectangular beds with closely cropped grass walks between. Climbers are planted along the fence, and at frequent intervals along some of the main paths where they are trained over arches or tied to stakes. In one part of the garden there is a mound with a summer house in the center over which climb several Dr. W. Van Fleet roses. The sides of the mound are covered with several varieties of Wichuraiana roses.

The rectangular beds are planted with hundreds of varieties of bush roses arranged in groups—teas, hybrid teas, hybrids prepetuals, briars, Rugosas, etc., from 2 to 12 of a variety. The plants were contributed by members of the American Rose Society for an impartial test of their merits. They are given the best of garden culture and care. The many vacant spaces which exist in the garden are more eloquent than words in showing what roses are not able to stand the climate which exists in the vicinity of Washington. The garden shows the roses which succeed best. Of these there are a large number in each class.

The Noisette class, particularly the climbers, are not successful here, nor others which are commonly regarded as southern roses—yellow and white Banksia. But Cherokee and Macartney (miscalled Cherokee in some parts of the South) are hardy.

Teas and hybrid teas are not generally hardy, yet the following varieties have proved hardy and continuous bloomers throughout the season, vigorous enough to make sufficient bushes to give some show:

Pink.—Col. R. S. Williamson, Dorothy Page-Roberts, Gustav Grünewald, Killarney, Killarney Queen, Königin Carola, La Tosca, Lady Ursula, Mme. Abel Chatenay, Mme. Camille, Mme. Caroline Testout, Mme. Jules Grolez, Mme. Lumbard, Mme. Leon Pain, Maman Cochet, Miss Cynthia Ford, Mrs. Wakefield, Christie-Miller, Radiance, Wellesley.

Yellow.— Grace Molyneux, Isabella Sprunt, Mme. Francisca Kruger, Mrs. A. R. Waddel, Alexander Hill Gray.

White.—Frances E. Willard, Kaiserin Auguste Victoria, Marie Lambert, Mrs. Herbert Stevens, White Killarney, White Cochet.

Red.—Florence Haswell Veitch, Gruss an Teplitz, Laurent Carle, Mme. Paul Euler, Mary Countess of Ilchester, Papa Gontier, Red-Letter Day, W. E. Lippiatt.

The Hybrid perpetuals seem about equally good in this locality. With these, selection becomes largely a matter of color and personal taste. Most of these bloom only once with a wealth of magnificent flowers in early June. These varieties bloomed late in the season and had more or less bloom all summer: Alfred Colomb, Countess of Roseberry, Eugene Furst, Frau Karl Druschki, George Arends, Gen. Washington, Mrs. John Laing, Mrs. R. G. Sharman-Crawford, Oakmont, Paul Neyron, Tom Wood, Victor Verdier.

Blooming Order of Climbers.

The beauty of the garden probably lies in the climbing roses which are given in the order in which they came into bloom at the National Rose Test Garden in 1921:

April 20.—*Cherokee*, a single white, desirable only for points south of Washington.

May 7.—*Dawson*, small flowered pink, showy.

Zephirine Drouhin, pink, semidouble, large, handsome.

Rubin, crimson, semidouble, small flowered, showy.

Dazzling Red, small double crimson, very showy.

Dr. W. Van Fleet, double blush, large, very vigorous grower with dark, glossy foliage.

May 14.—*Leuchstern*, single, deep pink outside, with white center.

Bess Lovett, deep rose, almost crimson at first, large, double, vigorous.

Climbing American Beauty, not quite as dark or clear a color as Bess Lovett but otherwise comparable to it.

Christine Wright, clear pink, double, excellent.

Alberic Barbier, yellow buds, white flower, medium.

Baroness von Ittersum, almost single, large salmon flower, vigorous grower.

Polyantha Grandiflora, white, single flowers of medium size.

May 18.—*Gardenia*, deep yellow buds, opening white, flowers medium, foliage dark bronze and green, very handsome in mass.

Climbing Orleans, deep pink, small single flowers in masses, very showy.

Longwood, pink, semidouble, large flowered, good foliage, vigorous.

May 20.—*American Pillar*, medium size, single, crimson flowers with white eye, excellent foliage, vigorous growth, among the best.

Silver Moon, large, single, white, with showy yellow stamens, beautiful both in bud and flower, foliage very dark green, large and healthy, making a splendid background for the flowers, vine vigorous.

Alida Lovett, large, double pink on a good growing vine.

Pom pom, small crimson, very double buttons.

May 23.—*Hiawatha*, small single, scarlet with white eye, small dark green, glossy leaves, moderate grower.

Excelsa, small double scarlet flowers in great masses.

May 27.—*Evangeline*, small single apple blossom pink flowers in great abundance.

Minnehaha, small deep pink, very double flowers with small green foliage and a good grower.

Climbers Which Bloom Continuously.

Among the climbing roses are a number that bloom more or less continuously during the season.

Birdie Blye is the most persistent bloomer of these but often fails to become much more than a bush. Deep rose color, large and double. Opened this year May 10.

Climbing Hermosa. Another persistent bloomer, rose pink, medium size, very double. Opened first May 10. A moderate grower.

Thalia or *White Rambler*, small to medium white flowers borne constantly after the first bloom on May 14. Free growing.

Trier. Small white flowers beginning May 14. A free grower.

Aglaia, or yellow rambler. A medium sized double rose with yellow buds becoming white. Began blooming May 10.

Alister Stella Gray, or golden rambler. A medium sized double rose with deep yellow buds becoming cream and often white. Began blooming May 31.

Climbers of Hybrid Tea Type.

Other ever-blooming roses are of the hybrid tea type with a mass of early bloom and scattered flowers the balance of the season. Most of them of a quality suitable for cutting. Foliage large but not as abundant as on many climbers.

Paul's Scarlet Climber when in bloom is the most showy plant in the garden. Large, scarlet, almost double. Was a mass of color for three weeks. Began blooming May 10.

Gruss an Teplitz. Not quite as fiery as Paul's Scarlet Climber but nearly the same color, somewhat smaller. Began blooming May 18.

Lion. More of an orange cast to the flowers than Paul's Scarlet Climber. Not so floriferous and first bloom over more quickly. Began blooming May 7.

Sheila Wilson. A large single rose with an unusual combination of yellow and red tones. Began blooming May 10.

Climbing Mme. Caroline Testout. Large, double pink. Began blooming May 10.

Climbing Lady Ashton. A large double pink, especially attractive. Began blooming May 23.

New Plant, Commonly Called Devil's Bur, Delights to Puncture Automobile Tires

Nature's adaptability in fitting plants to new methods of spreading their seeds is apparently illustrated in a noxious weed which has recently become troublesome in California and spread to Arizona, and which is known as the puncture vine. Its activities in Arizona, where it is commonly called Devil's Bur, were revealed to the United States Department of Agriculture during a Nation-wide weed survey now in progress.

This vine produces spiny seeds which attach themselves to automobile and bicycle tires which carry them long distances. It is not only an opportunist but an ingrate, because it is causing widespread trouble to motorists and cyclists by puncturing their tires. The possibilities for damage from this plant are illustrated by the experience of a California man who was reported to have had 70 punctures in one tire, all due to the puncture vine. The weed is considered so serious in California that the California State Department of Agriculture has published a number of special articles on the subject. The plant is being spread with rapidity in sections of Arizona where it never was previously known.

Another Importation from Europe.

The puncture vine is known scientifically as *Tribulus terrestris*. It is a native of southern Europe and was probably introduced into America by means of burs contained in the fleece of sheep. The fruit, or bur, splits at maturity into five sections, each equipped with a pair of spines about one-fourth inch long. The sections lie on the ground in such a manner that one of the spines always points upward ready to enter the first tire that comes along. In one California county it is estimated that half of all the punctures in bicycle tires and a large proportion of punctures in automobile tires are caused by this weed. The burs also cause severe damage to wool. The plant has been known as ground bur nut, caltrop, and has recently received the apt name of automobile weed. In addition to California and Arizona, it has been reported from Indiana, Iowa, Illinois, Nebraska, Kansas, Arkansas, and Texas. Hope for its eradication in fields is given in the fact that it is an annual and can be controlled by repeated cultivation, thereby preventing the formation of seed. Along roadsides, however, the plant can not ordinarily be controlled by mowing on account of the low, spreading habit of growth. Even after being closely cut, burs are apt to form on the ground. Department experts are planning to test the possibilities of exterminating the plant along roadsides by spraying with chemicals, such as crude oil or iron sulphate.

INCREASE IN AMERICAN EGRETS.

A gratifying report telling of an increase in American egrets noted on a plantation on the Cooper River in South Carolina has been received by the Bureau of Biological Survey, United States Department of Agriculture, from a correspondent there. Two years ago, the writer said, he saw on his plantation 2 birds of this variety; last season he counted 10; and this year he found 29 on two different occasions. Officials express themselves as much pleased with such results of the protection afforded migratory birds under the Federal bird treaty act.

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WIRELESS MARKET SERVICE POPULAR IN NEBRASKA

Nebraska has been quick to see the value of the radio information service sent out by the Bureau of Markets, United States Department of Agriculture, and various forces in the State are taking steps for increasing the facilities there for receiving and disseminating the news. Three counties have organized and are receiving radio information with much satisfaction to both the trade and the producers.

The radio station at the State University at Lincoln is receiving the radio reports daily and supplying them to the State Bureau of Markets, which releases the information through the local papers. The chief of the State bureau recently informed the Omaha office of the Federal Bureau of Markets that there was a growing demand for the radio news and that the State Department of Agriculture was contemplating organizing the State into three districts to distribute the information more quickly.

GENERAL LEVEL OF PRICES OF FARM CROPS ADVANCE

General level of prices of farm crops advanced during May, according to the report of the Bureau of Crop Estimates, United States Department of Agriculture. This is the first turn for higher prices of farm crops since the marked decline beginning in June, 1920.

Using 100 as the basis for the average price of farm crops during the year 1913, the index number of the prices on June 1 was 109 as compared to 104 on May 1, and 309 on June 1, 1920, when the peak in the prices of farm crops was reached.

The average price of wheat advanced during May from $1.11 to $1.21; that of corn from 59½ to 62½ cents; barley from 49 to 51 cents; rye from $1.05 to $1.12; and apples from $1.42 to $1.69. Hay, eggs, and chickens showed a slight decline in price during the month, while butter declined from 39 cents per pound to 29 cents.

NEW ORLEANS SUGAR EXCHANGE ADOPTS U. S. RICE GRADES

For the first time in the history of the southern rice industry quotations are now being given out by the Sugar Exchange of New Orleans on the basis of the rice grades that have been recommended by the Bureau of Markets, United States Department of Agriculture. Heretofore the only quotations of prices made in the South have emanated from the New Orleans Board of Trade and have consisted of meager information as to the range of prices of each variety.

For example, the range for a given variety was quoted at "2¼ to 5 cents" and the grades covered were left to the inference of the reader. It might be supposed that the top figure was for the fancy grade and the lowest price for medium grade, leaving the determination of prices for other grades uncertain. It is thought by those in touch with the situation that a great step forward has been made in the adoption of the system of quoting the Federal grades, as range of prices given, without stating specifically what grades are covered, is likely to cause confusion and is of little value.

INTEREST RATES ADVANCED ON SHORT LOANS TO FARMERS

Interest rates charged by banks to farmers of the United States for short-time loans averaged in April about 7.95 per cent, as compared with 7.61 per cent a year ago and 7.75 per cent in 1913, according to reports compiled by the Bureau of Crop Estimates, United States Department of Agriculture, based on figures received from country banks. The main purpose of the inquiry was to ascertain the difference of the averages of the various States and sections, together with what changes have occurred since the previous investigation made by the bureau in 1913.

The reports show that in Georgia the average rate is 10.36 per cent, which is the highest of any State average. This is about 73 per cent higher than the lowest State average—6 per cent—reported from several North Atlantic States. The report shows that in 1913 the highest State average was almost 100 per cent higher than the lowest average.

The figures generally indicate that the present spread in the different sections of the country is not quite as wide as formerly. In the 9 North Atlantic States the average interest rate in April was 6.08 per cent. In the 8 South Atlantic States it was 7.43 per cent. In the 5 North Central States east of the Mississippi River it was 7.04 per cent. In the 7 North Central States west of the Mississippi River it was 8.33 per cent; in the 8 South Central States it was 9.06 per cent; and in the 11 Far Western States it was 8.55 per cent.

BIG FLIGHT OF WILD GEESE NOTED IN SOUTH DAKOTA

Reports to the Bureau of Biological Survey, United States Department of Agriculture, from many parts of the country indicate that the unlawful killing of migratory waterfowl during the spring flight was greatly reduced this year as compared with the heavy slaughter during the spring flights in former years. It has been found that a large majority of people are impressed with the fact that the Government's work for bird protection is not only a wise conservation measure but is necessary to perpetuate hunting as a sport. The Federal law protecting migratory birds is thus being better observed and birds are not being molested so much in spring as formerly, with the result that they are now breeding in many places from which they were formerly driven because of constant disturbance from spring shooters. A message from one of the wardens regarding the spring flight of geese in South Dakota shows the excellent results being secured under the migratory bird treaty act regulations. "Never, even in the memory of the 'old timers,' has eastern South Dakota seen a spring flight of wild geese such as has taken place this year. They have flocked into lakes and fields in countless thousands."

IDLE MEN PLACED ON FARMS.

The county agent of Pulaski County, Va., in cooperation with the Salvation Army forces, has been placing on farms some of the men in the town who are out of work. The industrial concerns of Pulaski have been cutting off a number of men, thus causing them to be out of employment, and at the same time there has been a shortage of farm labor in the county.

Stocks of Low-Grade Cotton Accumulate—Prices of Snaps and Bollies Show Declines

There is a surplus stock of the lower grades of cotton in this country, according to reports recently compiled by the Bureau of Crop Estimates, United States Department of Agriculture. This report points out that low-grade cotton is classified in two grades, known as "snaps" and "bollies." Along the northern line of cotton production, more especially in Texas and Oklahoma, there is produced annually a considerable amount of cotton which does not reach full maturity on account of frost.

Frost Prevents Full Maturity.

This unmatured cotton, together with cracked or partly opened bolls, is harvested "bolls and all" and carried to gins equipped with huller attachments which crush the bolls and clean out the heavier trash, after which it is ginned, the product being designated bolly cotton or "bollies." Snapped cotton, or "snaps," is the product from fully matured, open bolls gathered in the bur, instead of being picked by hand. Snapping is resorted to when weather conditions weaken the stems to such an extent that the boll separates from the stalk more easily than the lint separates from the bur. Snapping is usually done toward the end of the season, after cotton has been subjected to winter rains, snow, ice, etc.

The report shows that during the past five years about 2,100,000 bales of snaps and bollies have been harvested in the United States, in addition to other low-grade cotton. Bolly cotton increased from 141,000 bales in 1919 to 186,000 bales in 1920, although the price received by farmers declined from 17.1 cents to 3.8 cents per pound. This low-grade cotton has entered into the crop total in recent years.

The number of bales produced from snapped cotton in 1920 amounted to 317,000 and the price of cotton of this character fell from 22.6 cents per pound in 1919 to 5 cents per pound. The total amount from snaps and bollies entering into the crop of 1920 amounted to 503,000 bales. Estimates of the quantity of snapped and bolly cotton made by the crop specialists of the Bureau of Crop Estimates and the Bureau of Markets are 550,000 bales for 1917; 210,000 bales for 1918; 497,000 bales for 1919; and 503,000 bales for 1920.

Europe Formerly Bought Largely.

In prewar times the European countries purchased large quantities of low-grade cotton, but until recently the markets of a number of these countries have been closed to American cotton. As a result much more than the average prewar amount of lower grades of cotton has accumulated in this country and is being carried in the stocks at this time.

SPRAYED PRODUCE BEST IF WELL WASHED BEFORE EATEN

When apples on sale show evidence of having been sprayed they are probably good apples, say specialists in the Bureau of Plant Industry, United States Department of Agriculture. A vigorous campaign is being carried on by the department among fruit growers to show them that by proper spraying they will develop the finest quality of fruit, free from plant diseases and insect pests. Similar attention to spraying some vegetables must be given to assure the best results. At the same time that the consumer is urged to demand sprayed apples, tomatoes, or celery for his own satisfaction, it is recommended that all market supplies be thoroughly washed before they are either cooked or eaten raw. This is important not only because of the likelihood of contamination which the food has undergone through street dust and handling but for the sake of removing any spray residue which may remain.

DRY LAND NEW MEXICO FARMS CAN HAVE GARDENS

The women in Union County, N. Mex., are working to have on every farm a garden large enough to supply the family with fresh, canned, and dried vegetables the entire year. Last year, under the supervision of the home demonstration agent, who is cooperatively employed by the State agricultural college and the United States Department of Agriculture, a great many new vegetables were tried out, such as Swiss chard, Chinese cabbage, asparagus, and celery. Everbearing strawberries, rhubarb, garden lemons, and other things which were not previously raised were successfully grown. Grapes, peaches, plums, apples, and apricots have been planted by many people who did not think, until recently, these fruits would grow in that county.

Everything tried, and given the proper attention, has brought good results. Some failures were reported, due to lack of moisture and lack of care. Reports show that from 25,000 to 50,000 quarts of vegetables and fruits were canned in this county last year.

ASSOCIATIONS WITH ONLY PUREBRED BULLS INCREASE

An effort is being made by the cooperative cow-testing association leaders in the western States to make the bulls of their associations 100 per cent purebred. That there is much interest in this movement is shown by the fact that the report recently received from the western office of the Dairy Division, United States Department of Agriculture, shows that recently two associations have been added to the 100 per cent list. These are the Sacramento-Yolo and the San Diego, both in California. There are now eight cow-testing associations, in the territory supervised by the western office of the Dairy Division, having all bulls purebred. Of these, three are in Idaho, two in Colorado, two in California, and one in Washington.

DESERTED PULPIT REFILLED BY CLOTHING CLUB WOMEN

Home demonstration work, carried on by the State agricultural colleges cooperatively with the United States Department of Agriculture, often has a far-reaching effect on the spiritual and moral values of community life. Some months ago the women of Calcium, Jefferson County, N. Y., became interested in dress-form work, and asked the home demonstration agent to call a meeting for the purpose of organizing a class. No house could be found large enough to accommodate all who wanted to come, so it was decided to gather in the old deserted church. The women cleaned, aired it, and organized their club there.

Somebody said, "Wouldn't it be nice if we could have church services here again!" For 23 years there had been no resident pastor in Calcium. Many of the women present could remember back to the time when the church was one of three, all of which the community had failed to support. The idea of reopening the church was taken hold of promptly by the clothing club, which worked with the entire community, and in a very short time sufficient subscriptions were secured to maintain a new pastor, who was installed forthwith.

COUNTY AGENT'S WORK OF FAR-REACHING IMPORTANCE

What the United States Department of Agriculture, in Cooperation with the State Agricultural Colleges, is Doing to Help Farmers and Their Families

BETTER CROPPING REDUCES COUNTY POOR-FARM COSTS

Up to 1920 the county farm of Daviess County, Ky., was run by the old system in vogue at so many county farms—that is, the use of the farm is given to the keeper and he is paid so much a meal for feeding the paupers. In 1919 it cost Daviess County $4,100 to feed its paupers. In 1920 a superintendent was employed and the county agent assisted in the management of the farm. Only those crops were grown which would improve the soil and furnish food for the inmates of the county infirmary. It cost the county by this method only $2,073 to feed the county farm inmates, and there were more paupers at the county infirmary than during the previous year. The county is much pleased with the new method of handling the infirmary farm and the consequent reduction in cost to the taxpayers of the county.

STOCK AND MONEY SAVED BY DEMONSTRATIONS WORK

County agents in Georgia conducted 277,743 demonstrations since 1910, an inventory of the cooperative extension work with the United States Department of Agriculture shows.

In the course of these demonstrations 1,015,167 hogs were inoculated with serum to prevent hog cholera, and those attending the demonstrations were taught how to do the work. By means of cooperative buying and selling of $24,427,835 worth of fertilizers, live stock, seed, etc., $3,935,442 was saved to the farmers of the State. Important work was done also in the development of boys' agricultural clubs, especially in connection with corn club work. The boys have grown products valued at $5,322,496.

ARKANSAS NEEDED TO BE SHOWN.

Many Arkansas farms which have been in need of terracing are being surveyed for this purpose by the county agents. In some instances the farmers need to be shown before they are convinced of its value. Early this year the agent of Cleburne County terraced part of a farm for the son of an old gentleman who had had no use for the county agent. During the day the old man came over to the field and remarked, "It is just like they told me about you demonstrators who don't know what you're about, trying to run water uphill." The agent took him to the other end of the terrace and showed him how the line looked from there. After he had looked "up the line" the doubtful one decided that the level was all right. Before the day was over he came around again to the agent and said, "Boy, some of these here days when you ain't doin' nothin', drap over and terrace some for the old man. My land has been cultivated 20 years, and I know it's needin' terracin'."

EXCELLENT CAUSE TO BE PROUD.

People, old and young, in Spotsylvania County, Va., are much more interested in good seed corn for their county this year than ever before. This fact is probably due in a large measure to the fact that the club boys and girls of the county won so many prizes at the numerous fairs last year. The first of these fairs was Fredericksburg and the last was the State Corn Growers' Association's show at Harrisonburg—six fairs in all. The boys and girls of Spotsylvania County in 1920 won $951 in cash, $50 in merchandise, and a silver cup. The importance of good seed corn has been brought to the attention of the people at large in this county as never before. The county agent is very proud of the fact that he was instrumental in bringing into the county, in cash premiums alone, $951 more than he cost the board of supervisors for the whole year.

CLUB WORK AIDS SCHOOL FUND.

The boys' and girls' clubs of Faulkner County, Ark., have raised $113 during the year and have deposited the sum in the bank as a nucleus fund toward building a new schoolhouse. This club made a wonderful record in 1920, and it has stood alone as far as help from the community is concerned, for not even the parents at the beginning of the year indorsed the movement. The boys and girls have won out and the parents are now very proud of the organization.

FILMS SHOWING BETTER FARMS AND HOMES PROVE POPULAR

Films made by the United States Department of Agriculture, which show better farming methods, better homes, and methods of improving rural sanitation and health have proved popular in Autauga County, Ala. With the assistance of a commercial-light firm, the county agent put on what the people of the county voted to be the best picture show they had ever witnessed in a rural community. The audience was very appreciative of the pictures and expressed themselves very freely as to the great good that will be accomplished by this kind of work. Everywhere that the films were shown the county agent was asked to return at some convenient time and show more pictures.

FARMERS' COOPERATIVE PAYS MEMBERS 6 PER CENT DIVIDEND

One of the farmers' cooperative associations in Newberry County, S. C., paid a 6 per cent dividend for 1920, which was all its constitution and by-laws allow. The directors reported that the business handled during 1920 amounted to $60,000, and that the approximate amount saved farmers, plus the amount returned to them in rebates, was $5,000. The association was found to be in good condition, and plans are being perfected to enlarge the scope of the work done.

PRUNING SAVES OLD ORCHARD.

Many an old orchard would produce fruit for a number of years if it were properly pruned. The county agents are endeavoring to see that the orchards in their counties that are in need of pruning are receiving this attention. One such orchard in Bamberg County, S. C., has been used for a demonstration in pruning for the past year and a half, and the results have been beyond expectations. Age, neglect, and scale had reduced nearly all the trees to one or two living branches, and no returns were being received by the owner from the orchard.

On the advice of the county agent nearly all the branches were pruned off and cultivation was started and kept up through the summer. This year instructions on pruning the new growth of wood

were given and a good crop of fruit has set. The orchard is now practically free from scale and is a good example of what may be expected from an old orchard that is given a little care.

BUYING COTTONSEED MEAL WHOLESALE SAVES MONEY

Farmers of Barren County, Ky., with the assistance of the county agent, last winter ordered $5,000 worth of cottonseed meal. The meal was distributed to every section of the county, and the wholesale buying saved the farmers $1,984. Many who bought meal for their milk cows had never used meal before as a feed for the dairy herd.

This same county agent instigated a walnut-hulling campaign last fall among the boys and girls of the county. He found a market for 1,000 bushels of shelled walnuts, and the boys and girls were glad to make money out of a product which usually went to waste after enough had been harvested for home use.

BUILDS WEEVIL-PROOF CRIB.

The county agent of Taylor County, Fla., reports that one farmer in his community has worked out a way by which a log corn crib can be made practically air-tight to guard the corn against weevils. This farmer put 3 or 4 inches of dirt on the floor and covered it with another floor. The walls were covered with rough lumber, and the cracks outside were filled with clay. The door facings were padded with cloth and the door made of two layers of cypress lumber, with a piece of paper roofing between. This arrangement cost about $10 in additon to the farmer's labor. Others in this neighborhood are building cribs in the same way.

GOOD ATTENDANCE AT MEETINGS.

The Branchville boys' and girls' club in Pulaski County, Ark., holds, as far as is known, the best record in the State for regular monthly meetings. This club was organized in November, 1917, and has never missed a monthly meeting in the four years since that time. The attendance at each meeting has been from 80 to 100 per cent.

TERRACING WORK DEMONSTRATED.

Much work with terracing was done last winter in Covington County, Ala. In this part of the State there are large losses by erosion, which, if taken in time, can be effectively checked by terracing the land. In one week the county agent located the terraces on 150 acres himself, and had four other terracing outfits under his supervision, working every day in other parts of the county. Over 600 acres were terraced by the four outfits. At one demonstration that week held by the county agent a tractor, mules, terracing plow, and ditcher were used. The meeting was well advertised and during the day 75 interested farmers came out. Wide, broad terraces were the type built. Farmers of this county are now building drags to use for the work, and several have ordered terrace levels for use on their farms and their neighbors'.

A TRUE PHILOSOPHER.

The county agent of Le Flore County, Okla., tells in his report about one farmer in his county who has found out a way to stop worrying. They have had tremendous rains down in that section of the county and there was too much mud for plowing. The agent met this man and said "I don't understand why you are looking so much happier than you did the last time I saw you; what's the matter?" He replied: "Nothing is the matter. I gave up worrying because I got nothing left to worry over—crops all gone, money all gone, credit all gone, food's about played out, can't get work, got nothing, so I've got nothing to worry about and have stopped worrying."

BIG DRIVE HERDS 15,000 RABBITS.

In a big rabbit drive which the county agent arranged in Brown County, Tex., 500 drivers herded some 15,000 rabbits and killed part of them. The big drive demonstrated two things—that the rabbits are plentiful enough in the southern part of the county to destroy all crops this year and also that rabbits can be driven in brush territory as well as in the open. Other drives of not quite as large proportions were held later in the month.

CULLS FLOCK WITHOUT EGG LOSS.

Good reports continue to come in to the county agent at Smyth County, Va., from those who have taken advantage of the poultry culling work given by him. There is still a great demand for information concerning the culling of flocks. One farmer reports that he sold chickens amounting to $70 without reducing his egg production at all. Another reports that he sold poultry amounting to $72.50 and is now getting just as many eggs as before.

BURNING PROVES CHEAPEST WAY TO REMOVE STUMPS

A stumping demonstration for the purpose of deciding what method of removing stumps was cheapest in that section was recently put on by the county agent of Lincoln County, Miss. A field with plenty of material for the demonstration was selected and three methods of removing the stumps were tried—digging, pulling, and burning. After careful estimates the farmers at the demonstration and the county agent decided that the cheapest way, where the stumps removed were not near enough to a town to sell the wood conveniently, was by burning. As soon as an air current or circulation was started by digging and boring holes, the fire burned easily and in a short time the stump was a wreck.

PLANS TO STAY ON FARM.

Joe Cox was for several years a prize winner in the boys' club work of Cleburne County, Ala. For the past three years he has been away from the farm, however, working on a railroad and in the oil fields of Louisiana. All this time he has saved his wages, and last winter bought and paid for a farm in his home county. He says that the club work and the short courses he took at the State college convinced him that he likes farming better than any other work.

BOY BUILDS UP HOG HERD.

Two years ago Don Evans, a Wagoner County, Okla., boy joined a pig club. Ever since that time he has worked faithfully under the supervision of the county agent. He now owns a good herd of Poland China hogs, and last winter built a model hog house, the plans of which, he told the county agent in a recent interview, he got from Farmers' Bulletin 436, Hog Houses. Don won $48 at the county free fair last fall, and is a strong booster for club work.

COMMUNITY PULVER WORKS WELL.

Two farmers in Campbell County, Ky., by the advice of the county agent, purchased a lime pulver with which to do community pulverizing last winter. Individual farmers had from 30 to 75 tons apiece crushed from the rock they hauled from their fields.

Bait Controls Range Crane Flies, A Serious Pest of Grain and Grass

Poison has been found effective in controlling maggots of the range crane flies which are responsible for serious losses in ranges, pastures, and grain and alfalfa fields in California each year. This discovery was made by specialists of the United States Department of Agriculture, who conducted experiments during the winter of 1920–21, when the pest was unusually abundant and destructive. A report of their investigations, together with a description of the pest and its habits, has just been published by the department in Department Circular 172, The Range Crane Flies in California.

Injury Occurs in Winter.

Injury is usually done during the winter and is more severe in rainy seasons. Fields become infested with blackish, mud-colored, wormlike maggots from ½ to 1 inch in length, which, under favorable conditions become exceedingly abundant, sometimes as many as 300 to the square foot. They devour all the vegetation and grain in infested areas, but in many fields their work is confined to scattered spots. They are likely to attack almost all winter-planted field crops, especially when these are on newly broken sod land where the flies have had an opportunity to breed and multiply undisturbed during several sucessive seasons.

Previous to the recent discovery of poisoned bait as a control measure, the only known method of reducing injury was continuous cultivation. The investigators noticed that the maggots usually came out during the night and fed upon portions of the plants above ground. This suggested the possibility that they would be attracted by poisoned bran bait, commonly used for grasshoppers. When such bait was used it was found effective, but it was also discovered that there was no need of flavoring the bait with molasses, as is the case in controlling grasshoppers. Poisoned bait for maggots is made by mixing 25 pounds bran and 1 pound Paris green with about 3 gallons of water. This should be applied at the rate of 10 to 20 pounds per acre, care being taken to spread it evenly.

Precautions should be taken not to allow the poisoned bait to fall in lumps when spreading it in the fields, and to avoid leaving quantities of it in places where children or animals can have access to it. This bait has been spread many times where cattle and sheep were grazing with absolutely no injury to the stock. The poison should be sown broadcast over an entire infested area rather than in strips, for the crane flies ordinarily do not travel far in search of food.

EXPERIMENT DESIGNED TO TEST LONGEVITY OF NUTGRASS NUTS

An interesting experiment to cover 15 years has been begun by the weed specialists of the United States Department of Agriculture to ascertain how long the nuts of nutgrass can stay in the soil and still retain their viability. Many almost unbelievable stories are told by farmers and others in the Southern Coastal States regarding the length of time nutgrass nuts remain viable in the soil. Some stories tell of grass nuts being dug up after 30 years' burial and still sprouting. A seemingly authentic case has been found by the Government weed specialists where a house built in 1912 was removed from its site eight years later and grass nuts sprouted on the spot from which it had been removed.

In order to get definite information on this point, four galvanized-iron cans, each about 2 feet square and 4 feet deep, without bottoms, were sunk into the soil at the Arlington farm near Washington, and 250 pounds of soil well filled with the grass nuts was placed in each. The cans were covered against light, and it is planned to open them on the 1st of June, 1923, 1926, 1931, and 1936, respectively, to test the viability of the nuts.

Velvet bean vines are known to smother nutgrass, but if the nuts will remain viable in the soil for an indefinite period, it is seen that other means of extermination will be necessary.

Proper Feed Keeps Up Milk Yield When Cows Are Kept from Pasture

Feeding cows for several years, according to the commonly accepted standards with little or no additional pasture, reduced the milk yield much below the optimum, it was found by experiments at the Government farm at Beltsville, Md. This condition may be corrected by giving the animal a dry period of two months, and feeding during that period a ration containing legume hay and grain with a high phosphorous content, with three or four times the amount of protein required for maintenance, and two or three times the total nutriment. The milk yield in the subsequent lactation period may sometimes be doubled by this treatment. The results of the experiments are given in Department Bulletin 945, The Influence of Calcium and Phosphorus in the Food on the Milk Yield of Dairy Cows.

In the case of cows of which the milk yield has been reduced by several years' standard feeding, as followed at Beltsville, a greatly increased yield can be brought about by feeding "alternated rations with phosphate" during the dry period. This is taken to mean that the ordinary rations are more likely to be deficient in one or both of the principal bone-building elements than in any other constituent.

Department Bulletin 945, The Influence of Calcium and Phosphorus in the Food on the Milk Yield of Dairy Cows, may be had upon application to the Division of Publications, United States Department of Agriculture.

LARGE PULP-WOOD RESOURCES IN ALASKA NATIONAL FORESTS

(Continued from page 1.)

area of land in private ownership is small.

The purpose of the Forest Service, it is said, looks beyond merely finding a market for Government timber in order that the timber may be cut and a new growth started in its place. The forests are administered as public properties created to serve public needs. Alaska's first need is said to be capital. It has not yet reached a point at which the upbuilding of the territory can be effected merely by an influx of pioneers of the type that conquered the wilderness in the Western States. While development must be a gradual process governed by economic facts, large-scale operations are essential, it is said.

SUCCESSFUL HOG SALE.

One of the most successful hog sales that has ever been conducted in Crenshaw County, Ala., was held there last winter. The county agent reports that a total of 606 hogs were sold, while a feeder bought 50 more to feed on his farm, that were not reported in the sales list. The total for the sale was $7,635.16. The tops brought $7.82½ per 100 pounds.

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WESTERN FOREST FIRE SEASON OPENS FAVORABLY

Frequent Rains Have Prevented Dangerous Conditions from Becoming General.

Relief Felt by Forest Service Officials Because of Small Funds Available for Fighting Fires—Splendid Service Organized—Warns Public to be Careful.

Frequent rains have been a boon to the western forests this spring, and the officers of the Forest Service, United States Department of Agriculture, express themselves as greatly relieved at escaping a danger which has been keeping them on the anxious seat.

The danger was that if the summer fire season came on as usual their control on the National Forests would be impossible with the funds available before July 1, when a new fiscal year begins. The appropriation for the current fiscal year was heavily drawn upon to fight fires last summer and fall, and though a deficiency appropriation was obtained from Congress which partly replenished the fund, the amount available this spring for protecting the National Forests has been less than the average expenditures necessary during the same period in recent years. Hence the relief that frequent rains have kept the forests too damp to permit dangerous conditions to become general.

Public Is Becoming Interested.

But the Government foresters do not consider that this is entirely due to favorable weather and timely rains. The public is becoming interested in forest preservation, and the oft-repeated story of the destruction caused by human carelessness is beginning to make its impression. The United States leads all nations in forest fires. With over 30,000 fires per year, destroying nearly $20,000,000 worth of timber and property, this country has the world outclassed.

There have only been four large fires so far this year in the 147 national forests scattered throughout the country—one in Minnesota, one in Florida, and the other two in Arizona, one of which started in Mexico and swept across the international boundary. This is an exceptional record and means much to the Forest Service, since the limited funds allotted by Congress for fire fighting are at low ebb near the close of the fiscal year, and entirely insufficient to meet emergencies.

Forest Service Taking No Chances.

There will be plenty of fires later in the year, state the forestry men. Lightning will set some, and campers, motorists, railroads, picnickers, and brush burners a good many more. The Forest Service is not taking any chances, however, for its 3,000 smoke chasers, fire lookouts, rangers, and supervisors are all "on their toes" to put into motion, at a moment's notice, the big fire-fighting machinery they have developed.

Eighty per cent of the forest fires that occurred in the United States during the past five years were due to human carelessness. A camp fire left burning, a lighted match or cigarette butt thoughtlessly thrown aside, the foresters say, often cause conflagrations that take days and weeks of hard work to suppress. It is for this reason that they ask every good citizen to adopt as a part of his daily creed the motto of the Forest Service—PUT OUT, KEEP OUT—FOREST FIRES.

WORLD'S COTTON CROP.

From the best information available by the Bureau of Markets and Crop Estimates, United States Department of Agriculture, the world production of cotton for the year 1920–21 is estimated as follows, in bales of 500 pounds gross weight (478 pounds net); United States, 13,366,000; India, 2,976,000; Egypt, 1,251,000; China, 1,000,000; Russia, 180,000; Brazil, 100,000; Mexico, 165,000; Peru, 157,000; all others, 400,000; total world, 19,595,000.

ORGANIZATIONS TO MAINTAIN RURAL COMMUNITY BUILDINGS

Many Advantages of Financing the Proposition by Voluntary Contributions.

Public Spirit at its Best is in Control if Many People Help—Ample Provision Needed to Meet Running Expenses—Advantages Gained by Incorporating.

To assist rural organizations in working out ways of financing and maintaining community buildings, the United States Department of Agriculture has just published Farmers' Bulletin 1192, The Organization of Rural Community Buildings. This is the third of a series of bulletins on rural community buildings, based on an intimate study made by specialists of the department of more than 200 such buildings in all parts of the country. The first, Department Bulletin 825, Rural Community Buildings in the United States, gives a history of the movement, treats of some of the general principles involved, and tells the story in detail of the erection, financing, management, and use of a few representative types; the second, Farmers' Bulletin 1173, Plans of Rural Community Buildings, gives the floor plans of 24 buildings of the better class, illustrating various types.

Methods of Financing.

It is pointed out in this third bulletin that though community buildings are financed in a number of ways, as individual donations, local industry, well-established social or fraternal organizations, by far the greatest number are erected through the united effort of interested people and various organizations of the community. When the latter plan is employed the necessary money is obtained either by voluntary contributions or by the sale of stock. Subscriptions are paid in the form of money, labor, or materials.

Financing a building by general voluntary contributions is suggested as per-

haps the simplest, quickest, and most elastic way while incorporated stock associations furnish more of the elements of financial permanency. The community method of financing has a number of advantages: (1) People are devoted to that to which they voluntarily subscribe; (2) this method develops community cooperation, promotes union, and decreases antagonisms through the necessity of different organizations and factions working together in a financial campaign; (3) as the money is voluntarily given from private funds the people are enabled to make experiments in the building which they would hesitate to make with public funds or those of an individual or club; (4) those who pay, control. Only a high type of citizenship subscribes to an institution of this kind and thus public spirit at its best is in control.

Community Buildings.

In recent years there has been a growing movement in the erection of community buildings by the municipality through taxation. This method also has its distinct advantages.

Maintenance expenses of community buildings are met by dues, fees, rentals, and receipts from entertainments, profits, and concessions. Some of the best organizations maintain their buildings entirely by annual dues. In the case of buildings financed by an individual or by an industrial concern, a community association is generally formed which guarantees the maintenance of the building as a condition of the donation. Sometimes this is done by the municipal government. If some such provision is not made, the donor generally includes a perpetual maintenance fund in the original endowment. In the case of community buildings financed by clubs, the club stands back of the building as a guaranty of its maintenance. The local government is behind all buildings which it finances, although revenue accruing from the building is generally sufficient for all maintenance expenses.

Most community associations which finance their buildings by issuing stock, incorporate under the State laws in order that they may have a more effective instrument for buying, selling, and holding property. To guide such associations, copies of articles of incorporation, constitutions, and by-laws now in use by a number of well-established organizations are included in the bulletin. State laws relating to municipalities and counties erecting buildings are also given. Copies of the bulletin can be obtained free on application to the United States Department of Agriculture, Washington, D. C.

Prevent Spread of Southern Pine Beetle By Cutting Out All Infested Trees

More merchantable-sized timber probably was killed in the Southern pine belt during the last 30 years by the Southern pine beetle than died from all other causes combined. It is one of the most destructive enemies of all species of pine, from Pennsylvania to Texas, yet the prevention of serious outbreaks and the control of this menace to the great timber resources of the South not only are possible but entirely practicable, say specialists of the United States Department of Agriculture in Farmers' Bulletin 1188, The Southern Pine Beetle, recently published. It is only necessary, says the bulletin, to cut and utilize for fuel or lumber, during the fall and winter months, all trees that died during the late summer and fall, making sure that the bark of the main trunk is burned.

Spread Rapidly When Well Established.

Under average or normal conditions caused by the activities of the beetle a few scattering trees are killed by it each year in mature stands of pine timber throughout the Southern States. When conditions become favorable for the multiplication of the insect, it is able to kill groups of trees, and if these groups increase in number and size the following year they constitute the danger signal of an outbreak which may result in widespread devastations, according to the bulletin.

Between 1890 and 1893 these beetles killed a very large percentage of the yellow, pitch, and white pines of West Virginia and Virginia, and since the earliest records, in 1842, have killed a vast amount of timber in the Atlantic and Gulf States, most of which has been a total loss. Their destruction can only be compared to that caused by forest fires, and, as has been demonstrated, they may lead to far greater destruction than has ever been recorded as resulting from fires alone in the Southern States.

Excavates Long Barrows.

The insect is a small brownish or black beetle, somewhat smaller than a grain of rice. It flies from March to December in the more southern sections, and from May to November in its northern range. It attacks the middle and upper portions of the trunks of healthy pine trees, causing their death by excavating long, winding burrows, or egg galleries, which extend through the inner layers of the living bark and mark the surface of the wood.

Their presence is plainly indicated by patches of dying or dead pine which show no evidence of injury by fire or other destructive agencies. The trees infested by the developing broods are indicated by the fading green, greenish-brown, or yellowish-red of the foliage, and positively determined by the removal of some of the bark from the middle of the trunks and the finding of characteristic work in the inner bark or on the surface of the wood.

Converting the trunks of the infested trees into cordwood and using it for fuel before the beetles leave the bark the following spring, or making the timber into lumber and burning the slab or bark, are the best methods of preventing the spread of the insect. Bark on the infested trees still standing is sometimes removed and burned to check the spread of the insect. The best time to conduct control operations is during the period between December 1 and March 1. It is essential, before control work is undertaken, that someone who is familiar with the work of the beetle take charge of the operations. Trees for several miles around an infested area should be carefully examined, and for this reason owners of pines should cooperate in carrying on the control work.

IMPORTS OF FOREIGN PLANTS MUST BE FREE OF SOIL

A revision of quarantine No. 37, with regulations, which restricts the entry from foreign countries of nursery stock, plants, and seeds, has been prepared by the Federal Horticultural Board, United States Department of Agriculture. The revision, which becomes effective August 1, 1921, makes no change in the quarantine, although two regulations, Nos. 2 and 7, have undergone important modifications.

The requirement of freedom from sand, soil, and earth is made to apply to all plants and seeds imported under the terms of regulation 2. Under regulation 7, inspection must hereafter be made at the time of packing of all nursery stock and other plants and seeds, and the certificate of inspection must include certification of packing materials and that the plants have been washed and are free from soil. This modification has been enforced under a special order since March 7, 1921. Under regulation 1, a number of definitions have been added and a few unimportant verbal changes have been made in other regulations.

HOW THE FARMER CAN FIGURE COST OF HIS POTATO CROP

Labor and Material Constitute About 80 Per Cent of Total Cost of Production.

By Applying Current Rates for Labor and Prices for Materials it is Easy to Determine Production Costs—Add Overhead, Taxes, and Rent.

Figures from which the potato grower can make a fairly close calculation of his own cost of production are given in a preliminary report on labor and material requirements in potato production, just issued by the United States Department of Agriculture. These figures, gathered by the Office of Farm Management and Farm Economics in the summer of 1920, represent results on 461 farms in nine potato-growing districts of Minnesota, Wisconsin, Michigan, New York, and Maine.

It is shown that labor and material costs—that is, man labor, horse labor, fertilizers, and seed—constitute about 80 per cent of the total cost of potato production in average practice. The department points out that the farmer knows what his labor and material requirements are in hours, bushels of seed, etc., or can easily determine them, and that by using these with current rates for labor and prices for materials, he can readily approximate these costs. Since these costs are, roughly, 80 per cent of the total operating expenses, it is then but a simple problem to find out the total operating expense, including overhead, taxes, etc. To this must be added the charge for the use of land, to get the total cost.

The following example, based on the actual results obtained in Waupaca County, Wis., shows how basic requirements, as determined for the 1919 crop, were used in estimating the cost of producing the 1920 crop on a farm in that county:

Acre cost of growing potatoes in Waupaca County, Wis

Items.	Amounts.	Approximate rates.	Cost per acre.	Cost per bushel.
Man labor	77.4 hours	$0.40	$30.96	$0.25
Horse labor	77.2 hours	.20	15.44	.13
Manure	12.7 tons	2.00	25.40	.21
Fertilizer	0	0	0	0
Seed	10.6 bushels.	3.75	39.75	.32
82.3 per cent of operating expense.			111.55	.91
Then 100 per cent of operating expense.			135.54	1.11
Use of land charge, 6 per cent of $161.			9.66	.07
Total cost			145.20	1.18
Yield per acre, 123 bushels.				

In the case cited the man-labor rate had increased 20 per cent and the cost of seed potatoes 300 per cent over 1919 figures, though the expenditures as measured in hours of labor, bushels of seed, and tons of manure, were practically the same. "Use of land" is figured at 6 per cent on the acre investment.

Department specialists in cost of production studies point out that the accuracy of the results obtained by the farmer in estimating his costs by the method here described will depend largely upon how closely he is able to judge how his own labor expenditure per acre compares with the average for his locality.

The following summary of the basic acre requirements of potatoes, as determined in this study, will serve to give potato growers in the various regions concerned a basis to work from in estimating their costs:

Summary of basic acre requirements of potatoes.

	Minnesota.		Wisconsin.		Michigan.		New York.		Maine.
	Clay County.	Anoka County.	Barron County.	Waupaca County.	Montcalm County.	Grand Traverse County.	Steuben County.	Monroe County.	Aroostook County.
Number of farms	51	54	47	50	49	52	50	50	58
Man labor (hours)	a 29.2	63.7	92.7	77.4	73.9	90.2	87.1	85.6	a 77.6
Horse labor (hours)	65.7	86.9	100.3	77.2	85.5	78.0	98.4	116.0	110.0
Manure (tons)	14.1	13.9	17.9	12.7	12.9	12.3	12.1	15.7	10.4
Fertilizer (pounds)			500		421		776	387	1,980
Seed (bushels)	12.3	9.5	11.6	10.6	7.7	11.3	11.2	13.2	15.4
Acre yield (bushels)	103	104	152	123	109	124	141	110	278
Acre value (land)	$140	$199	$179	$161	$124	$117	$80	$192	$182
Average potato acres per farm	50.2	16.1	8.1	12.3	10.4	9.6	11.2	10.8	28.2
State yield per acre:									
1919 (bushels)	87		94		90		109		240
1920 (bushels)	95		108		105		125		180

a Picking time not included. Largely contract work.

The Office of Farm Management and Farm Economics makes the following suggestions to farmers in these areas who may wish to use the figures above presented in estimating the cost of the 1921 crop of potatoes:

1. Labor. Multiply the estimated number of man hours required per acre on your farm by the local rate of hired labor per hour and the estimated number of horse hours by the prevailing horse rate. If no other records are available, the number of hours as given in this report may be used as the labor requirements.

2. Fertilizer. Include commercial fertilizer at cost. Manure may be valued at the suggested rate of $1.50 per ton for 1921.

3. Seed. Multiply the number of bushels planted per acre by the current market price at time of planting.

4. "Other" expense. This includes the charges for spraying, machinery, storage, taxes, insurance, and overhead expense. For estimating allow 25 per cent of the charge for labor, manure, fertilizer, and seed.

5. Charge for the use of land. Use cash rent basis if available in the community. Interest at mortgage rates on the conservative value may be used to estimate the charge for the use of land.

6. Total acre cost. The sum of the charges for man labor, horse labor, manure, fertilizer, seed, other expense, and the charge for the use of land constitute the total acre cost.

7. Bushel, barrel or cwt. cost. Divide the total acre cost by the yield per acre. If estimating in advance of the harvesting of the crop, use a ten-year average yield as the basis for the unit cost.

FIRST ASPARAGUS CLUB IN UNITED STATES ORGANIZED

An asparagus club has been organized among the boys of Monmouth County, N. J., under the leadership of the county club agent. This is the first of its kind to be started in New Jersey and, as far as the United States Department of Agriculture is informed, in the United States. The enterprise is the outgrowth of cooperation between the market gardening specialist and the county club agent. The object is to demonstrate in the Hazlet community the growing of a large type rust-resistant variety of asparagus.

Some time will have to elapse before the boys realize any profit from their asparagus. In order to sustain this interest and give them some money return for their labor, intercropping will be practiced until such time as the main crop yields returns. This year carrots will be grown.

Farmers are slowly building up their herds of cattle and hogs, after the heavy reductions of 1920. This is indicated by the special live-stock reporters of the Bureau of Markets and Crop Estimates, United States Department of Agriculture.

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PRECAUTIONS TAKEN AGAINST INTRODUCTION OF RINDERPEST

Every possible precaution is being taken through the Federal quarantine service to prevent the entry into the United States of rinderpest, probably the most fatal disease which affects cattle. As an additional safeguard the United States Department of Agriculture, through its Bureau of Animal Industry, has obtained from the Bureau of Agriculture of the Philippine Islands a fresh supply of anti-rinderpest serum, so that no time may be lost in utilizing every effective method known in combating an outbreak should one occur in the United States despite the precautions taken.

Rinderpest, which has not appeared in Europe since 1881, has prevailed extensively in western Europe since the war, and has been found also in South America. The United States never has been invaded by this disease, although there always is danger because of trade relations between South America, Europe, and this country. It is this danger which has caused the Bureau of Animal Industry and the Federal quarantine service to exert special effort in protecting American live stock.

FOREST SERVICE DEPLORES WASTE IN WOOD TURNING

The Forest Service of the United States Department of Agriculture recommends a more intelligent use of timber after it is grown. Forest conservation deals with the utilization of wood in the sawmill or factory, as well as with its production in the forest. There is just as much conservation in making twice as many ax handles out of the same amount of wood as there is in doubling the amount of wood grown on a particular area.

Investigations made by the Forest Service have shown that in logging and manufacturing an average tree but 33 per cent of its total volume, including limbs and bark, is actually realized as seasoned rough lumber. Taking rough lumber as the starting point, only 85 per cent of it reaches the final manufactured form in planing mills and sash and door factories; and but 75 per cent of it appears as finished parts in the manufacture of furniture and vehicles. There is probably no wood-using industry in the United States in which there is a greater need of working out ways and means of saving raw material than the manufacture of turned products. In certain instances, 2 tons of hickory stock—a high-grade material rapidly becoming scarce—yielded but 400 pounds of finished handles.

The Forest Service is encouraging the drive launched by wood-turning manufacturers for standardizing the raw material, reducing waste, and extending the timber supply.

EXCHANGING WEATHER REPORTS BETWEEN VESSELS INCREASES

The practice of exchanging weather reports by wireless among vessels at sea is constantly increasing, says the Weather Bureau of the United States Department of Agriculture. A weather report was recently received from the captain of the British tank S. S. *Tascalusa*, covering the entire voyage of that vessel from Hongkong to San Francisco. Embodied in the report were weather reports received by wireless from other vessels along the route.

This report is of especial interest because it shows the possibilities of exchanging weather observations by vessels at sea, from which deductions can be made as to the location and movement of storm centers, and the character of weather to follow. Officers of other ships, the Weather Bureau suggests, could well collect and make use of such information by wireless, thus supplementing the weather reports and forecasts distributed by wireless by various meteorological services.

The practice of interchanging weather reports by wireless between ships at sea is perhaps more general at present in the North Atlantic than in the North Pacific Ocean. To meet the needs arising from the growth of this practice the Weather Bureau recently published a base map embracing the western part of the North Atlantic Ocean, the Gulf of Mexico, and Caribbean Sea designed for use in preparing weather maps on shipboard from observations received by wireless.

FARMING RISKS GREATEST IN THE PLAINS STATES

Risks in the production of three great staple crops—corn, wheat, and oats—are greatest in the Plains States extending from Texas to North Dakota. This general fact is established by the average deviation of the yield per acre from the average yield, computed by the Bureau of Crop Estimates, United States Department of Agriculture, for these three crops for each State from the records of 50 years.

On the other hand, the North Atlantic and the Western States are regions of comparatively low risk, or deviation of yield per acre from the average, for wheat and oats, and the entire Atlantic coast and the West for corn.

The great corn belt, with its enormous production and surplus above local consumption, is, after all, prominently subject to risks of weather, insects, and disease in the production of crops, and, while it would be going too far to say of this region as a whole that the results of its agriculture are either "a feast or a famine," yet there is a tendency in this direction as the area covered by the average becomes more restricted to county, township, and individual farm.

COTTON PRICES SHOW GREAT RANGE IN QUARTER CENTURY

The price of cotton, received by farmers, has varied enormously since the end of the long period of very low prices about 25 years ago. The lowest price of December 1 in the records of the Bureau of Markets and Crop Estimates, United States Department of Agriculture, is 4.6 cents per pound of lint in 1894, and it was as low as 5.7 cents in 1898. The year 1903 was notable in cotton price history, because the price rose to 10.5 cents, and remained substantially at this higher level, or above. In the first year of the World War, 1914, notwithstanding the "buy-a-bale" cry, the cotton price of December 1 was 6.8 cents, but it rose to 11.3 cents the next year, to 19.6 cents in 1916, to 27.7 cents in 1917, and to 35.6 cents in 1919. The drop to 14 cents a pound in 1920, or a fall of 61 per cent in one year, cut producers to the quick.

Fire Danger Leads to Ban Against Smoking in Cyclone-Swept Forest

Smoking, during periods of fire danger, on National Forest lands within the cyclone-swept area of the Olympic Peninsula, Wash., has been prohibited on and after July 1, by Secretary of Agriculture Wallace in amendment to the rules and regulations for the use and protection of the National Forests. Exception to the smoking rule is made on improved camping grounds designated by the Supervisor of the Olympic National Forest, and improved places of human habitation.

Area Covers 840 Square Miles.

The area covered by the no-smoking order amounts to some 540,000 acres, and includes all of the Olympic National Forest west of a line extending from the east end of Lake Crescent, southward a distance of approximately 45 miles to the east end of Lake Quinault. The period of fire danger during which no smoking will be permitted is to be determined and publicly announced by the District Forester at Portland, Oreg.

The fire trap created by the cyclone of January 29, which swept the forests of the Olympic Peninsula in a wind estimated to have reached 150 miles an hour, is the worst known in the history of the country. Over six and three-fourths billion feet of timber, on a strip 90 miles long and from 20 to 30 miles wide, was blown down by the storm and now lies in a tangled mass. The greatest damage was done on State and private lands, only about one billion feet of National Forest timber being wind thrown. Should fire ever gain headway in this devastated area foresters say that the most stupendous conflagration in the annals of the Nation would result.

Realizing the menace of fire in this great blow-down area, the State and Federal Governments are cooperating in protection measures to insure its safety, and have each appropriated a fund of $100,000 for fire detection and suppression. Roads, trails, and telephone lines have been constructed through the blow down, and special fire fighting motor trucks, equipped with several thousand feet of hose and a portable pump engine, located at central points for emergency use. Guards will be stationed on all main lines of travel throughout the region, to see that no one enters except under special permit. Aerial fire patrol will also be maintained from Camp Lewis, Wash., during the danger season, through cooperation of the Air Service, U. S. Army, with the Forest Service.

VALUE OF CUCUMBER GRADES SHOWN BY ACTUAL TEST

A substantial increase in net return to the growers and a stimulated demand for the product were the outstanding features of a test by the Bureau of Markets, United States Department of Agriculture, for its tentative grades for cucumbers held at Wauchula, Fla., recently in order to determine their value under actual marketing conditions. The test, it is said, clearly indicated the advantages of careful grading and standardization.

The growers' association had built a central packing shed, in which grading machines were installed to handle the product of its members. Of the 48 cars loaded by the association all were well within the grade requirements. Most of these cars contained both No. 1 and No. 2. The average price received for a hamper of No. 1 packed by the association was $2.42; for No. 2, $1.85; for No. 3, 92 cents. "Farm" pack cucumbers were graded only No. 1 and No. 2 and sold for $1.75 and 92 cents, respectively.

The yield per acre of cucumbers ranged from 200 to 350 hampers, with an average of 260. The estimated return per acre was $471.55 for stock packed under the United States grades; No. 1, of which there were relatively the smallest number, selling for a total of $157.30, No. 2 bringing $268.25, and No. 3, $46. The return for "farm" pack, figuring on the same basis, was $268.68 per acre. The No. 1 brought $173 and the No. 2 $95.68. The United States No. 3 were packed in the No. 2 grade by these growers. The association members using the grades got more per acre for the No. 2 than was obtained for the No. 1 "farm" pack. The cost of producing and placing the hamper on the car was between 85 and 90 cents.

COUNTY AGENT TEACHES FIRELESS-COOKER MAKING

An illustrated lecture showing the construction of a fireless cooker was given by the county agent in Onslow County, N. C. After the meeting he was asked by a number of the ladies to come back to that community and assist them in making a cooker. He did so in a few days, and when it was finished three men in the audience said they were going home and would make cookers that week. A flour barrel, a lard pail, and paper were the materials for the cooker, which worked splendidly. The local hardware store, as a result of this work, ordered several soapstones and a quantity of asbestos so that the people could make home-made fireless cookers whenever they wanted to.

INSPECT STORED WOOL FREQUENTLY FOR MOTHS

At this season of the year wool held in storage should be carefully inspected at frequent intervals for moths, specialists of the United States Department of Agriculture say. If there are no evidences of moth injury now it is not likely that the wool will become infested enough to cause injury for several months at least. If no damage is noted by July or August, the wool can be carried over winter without injury, unless stored close to other infested commodities.

Although in the Southern States wool is often held for two years without the slightest injury from moths, and wool held in a cold climate is in even less danger, the department's experts caution growers that every precaution should be taken in storing. It is suggested that a raised platform be built which will permit a free circulation of air under the stacks and thereby prevent dampness which is a source of danger from moth infestation.

The Department of Agriculture will be glad to examine wool samples forwarded to it, and will render an immediate report as to the condition of the wool from the standpoint of possible moth infestation. Advice will also be given regarding needed control measures. Such samples should be addressed "Chief, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.," and marked plainly "For examination for moth infestation."

COOPERATION PROVES PROFITABLE.

Farmers in Wilson County, Texas., shipped peanut hay last winter cooperatively, under the supervision of the county agent. The hay which was sold in this way brought the farmers $3 per ton more than any of the local dealers were offering at that time. Six carloads were shipped at a time and as 10 tons were loaded to the car this meant that the farmers received $180 a shipment more than they would have received if they had marketed it locally.

Squirrels Plant Black Walnut Groves When Burying Winter's Supply of Nuts

Bouncing along the fence rail like a bit of animated thistledown, he manages to convey the impression that he hasn't a serious thought in his head, and few would suspect that the squirrel is the chap who supplied the American Army with the wood for their gunstocks, though he didn't mean to do it, of course. He was looking after his own food supply, saving the resources of summer against the famine of winter, but incidentally he placed a big deposit to man's account in Nature's savings bank.

The Forest Service, United States Department of Agriculture, is authority for the statement that the squirrel, through his habit of burying nuts, has been the most important agent in the reproduction of the black walnut groves. The timber from the groves planted years ago by the squirrels satisfied an important need during the war, when walnut was used to make gunstocks and airplane propellers. Substitute woods for gunstocks have been tried by many manufacturers, but none has been found that proved as suitable for this purpose as the black walnut.

Plants Nuts Wisely.

The fence-rail forester seems to have the needs of the black walnut in his mind when he goes about his work. As a sapling this species can not endure much shade; if it is to survive it must be planted in rich soil where the sunlight will fall upon it. The squirrel has set out whole groves by burying the nuts in the open areas at the forest edges, and also many single trees by planting in the fence corners. Why he buries the nuts is evident enough, but why he leaves some of them to sprout and grow is not so clear. It may be that an unusually severe winter—or a hunter or an owl or something else—kills the little banker before he has time to draw out his savings. An early spring may make him independent of his storage plant. Or it may be that he has an absent-minded streak in his graceful make-up and just forgets where he puts a thing. Whatever the cause, humanity profits from the result.

In Bulletin 933, a professional paper by the Forest Service, the growth and management of black walnut timber is discussed. In reviewing the present supply of this valuable wood the specialists estimate roughly that there are 821,000,000 feet of black walnut in this country. This figure is approximate only, and it is well to remember that only 50 per cent of it is available to commerce. The remaining 50 per cent is growing in inaccessible spots, or is held by owners who refuse to sell.

A Rapid Growing Tree.

Black walnut is valuable, it is easy to secure a stand, and it makes a fairly rapid growth. There is always a demand for it and, in war time, an exceptional demand at high prices. Under these circumstances it would seem that large commercial groves would be the common thing, but the fact that this tree requires the use of good agricultural soil handicaps commercial production. Before the war the annual cut of black walnut ran between 40 and 50 million feet a year, but the inroads made upon the groves during the hostilities have considerably reduced the supply now available.

Careful management of the existing groves and the establishment of new ones wherever economic conditions will permit will be necessary measures if the needs of the future are to be met.

Black walnut has exceptional qualities when planted as an ornamental tree. With the exception of a tent caterpillar, its foliage appears to be nearly free from insect pests that damage the beauty of other shade trees. It also furnishes a nut which is of edible and commercial value.

MISSOURI ISSUES PUREBRED LIVE-STOCK DIRECTORY

An aggressive step to bring about a more widespread distribution of purebred live stock is the issuance by the Missouri State Board of Agriculture of a purebred live-stock directory. It was prepared with the cooperation of the United States Department of Agriculture. A valuable feature of the directory is the presentation of figures showing the marketable surplus of both males and females for various classes and breeds. In hogs particularly the surplus is apparent, as shown by the figures 10,378 for boars and 15,027 for sows. These figures are more than half of the total surplus of all the purebred live stock included in the compilation.

The directory includes data on beef and dairy cattle, hogs, sheep, goats, horses, jacks, and jennets. Increased usefulness is given to the figures by a 73-page list of purebred live-stock owners, together with their addresses. This enables the reader to see at a glance the sources of purebred live stock in various parts of the State. The information given in the directory was made possible largely by the reports of assessors who gathered the data under the Missouri State farm census law enacted in 1919.

MUCH GRAIN WASTED BY CARELESSNESS IN THRASHING

Hundreds of thousands of bushels of grain are lost to consumption each year on American farms because of improper adjustment and lack of efficiency in the operation of thrashing machines. The United States Department of Agriculture has given considerable attention to this loss with a view to ascertaining how far improved methods can be economically introduced to adjust waste. It is true, experts point out, that sometimes the time and labor involved in checking a small loss in worth more than the saving. Nevertheless, there are many leaks on almost every thrashing job which might easily be stopped if the farmer or machine operator would spend a few hours in the study of the problem and a few dollars in replacing worn and damaged parts.

Feeding the grain into the machine, adjustment of the cleaner, and other small items go to make up a total that may mean gain or loss. Much grain is wasted by failure to clean up at the end of the setting. The United States Department of Agriculture has issued Farmers' Bulletin 991, "The Efficient Operation of Thrashing Machines," which contains much good advice on this subject. This bulletin may be obtained by writing to the United States Department of Agriculture, Washington, D. C.

LITTLE UNEXPECTED HELPS CARRY BROADER MESSAGE

The county agent has to serve in all sorts of capacities. The agent in Wilson County, Tex., reports an emergency case where he was called in to render first-aid service. A fine span of mules had run away with a scraper and were badly cut up. Although no bones were broken, the mules had received several bad cuts about the hind legs and one main tendon was badly lacerated. The wounds were disinfected and dressed, and instructions given for their further treatment. It is in small ways like this that the county agent convinces the farmer that he is there to serve and that he really knows his job.

Silver-Black Fox Farming of Importance Because of Decreasing Fur Supply

Approximately 4,849 silver-black foxes are being bred in captivity in the United States, according to reports to the Bureau of Biological Survey, United States Department of Agriculture, from 215 fox ranches, representing a value in animals and equipment estimated at $4,279,830. All reports have not yet been received, and conservative estimates place the number of silver-black foxes in this country at from 5,000 to 6,000. Some ranchmen estimate the number as high as 10,000.

Statistics on the fox-ranching business being gathered by the bureau indicate that fox raising in the United States, especially in the northern tier of States, is rapidly becoming an important industry. The information sought has to do chiefly with the location and number of ranches, number of foxes, and money invested.

Price Edward Island, Canada, is regarded as the center of the industry. Many foxes are now bred in captivity in a great number of States, including Maine, New Hampshire, Vermont, Massachusetts, New York, Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota, Illinois, Iowa, Montana, Idaho, Oregon, Washington, Colorado, and California, and in Alaska. It is probable that there are other States in which fox farming is carried on, as the records of the bureau are not yet complete.

Ranchers Reticent About Their Business.

Officials say it is very difficult to secure authentic information for the reason that some ranchers decline to fill out and return the questionnaires sent them. Many ranchers who volunteer information report it in such a manner that it is sometimes very difficult to interpret. Then, too, in addition to raising silver-black foxes some ranchers keep red and cross foxes, skunks, martens, and muskrats; the amount of money invested and reported, therefore, in such cases naturally covers the whole project, making it impossible to allot the correct amount for breeding silver-black foxes. Some ranchers board foxes for other breeders, which also adds to the difficulty of securing correct information. These facts, it is said, should be borne in mind in determining the value of the following figures concerning silver-black foxes. These figures are preliminary, as the reports have not all been received.

Approximate number and value of silver-black foxes and fur-farm equipment reported in the United States:

State.	Number of ranchers.	Number of foxes.	Value of animals and equipment.
California	2	14	$20,000
Colorado	3	9	10,200
Idaho	1	4	3,000
Iowa	1	7	2,000
Illinois	1	20	7,000
Maine	41	940	530,350
Massachusetts	17	488	758,700
Michigan	70	1,295	990,375
Minnesota	14	516	317,300
Montana	5	130	134,000
New Hampshire	3	68	54,500
New York	18	510	733,205
Ohio	5	49	112,700
Pennsylvania	4	189	61,500
Wisconsin	22	551	493,200
Vermont	7	96	49,200
Washington	1	2	2,600
	215	4,849	4,279,830

The permits issued by the Department of Agriculture for the importation of foxes into the United States from Canada for the year 1920 totaled 805, as compared with 335 in 1919. Here, again, it is impossible to ascertain the exact number of foxes coming in, for the reason that many are brought in for exhibition purpuposes and then returned to Canada. The number of silver-black foxes in Canada in 1919 is given in a preliminary report of the Dominion Bureau of Statistics as 6,433, with animals valued at $3,013,115, not including equipment. There were 2,020 pelts sold at a total valuation of $482,364. These figures, it is said, are as nearly correct as it is possible to secure; but it is thought that there are undoubtedly many more foxes in Canada than are here reported.

BANDED BIRDS ACCIDENTALLY FOUND SHOULD BE REPORTED

Persons engaged in outdoor activities, whether or not trained bird observers, are requested to cooperate with the Bureau of Biological Survey, United States Department of Agriculture, by furnishing data to supplement the bird-banding work that is being conducted by the bureau. When anyone happens to capture a banded bird or to come upon one that has been hurt or killed, it will be of great assistance to the investigations of the department to have a report made of the facts by returning the band (if the bird is dead; otherwise the band should not be removed, but its number noted), together with details as to when and where the bird was found, and its kind, or at least its description.

The aluminum bands issued by the Biological Survey carry the abbreviation "Biol. Surv." and a serial number on one side, and "Wash D. C." on other. But as other bands have been used on a large number of birds by various individuals and institutions, it would be advisable for anyone finding a bird that carries a band not marked as above indicated, or of which the address is not clearly understood, to forward the information to the Biological Survey, where every effort will be made to locate the person responsible. These bands are placed on the bird's tarsus, the bare portion of the leg immediately above the toes.

Experts in bird work are using the banding method to solve a variety of interesting problems relative to the migrations and life histories of our native birds which are thus approached from the aspects of the individual birds. Some of the more important questions that can be solved by banding operations are:

How fast do the individuals of any species travel on their periodic migrations; that is, how many miles per day will any one bird average during these journeys and what is the total time consumed in a trip?

Does any one flock continue in the van or is the advance made by successive flocks passing one over the other in alternate periods of rest and flight?

Do individuals of any species always follow the same route, and is it identical for both spring and fall flights?

Do migrating birds make the same stop-overs every year to feed?

How long do birds remain in one locality during the migration, the breeding, or the winter seasons?

Do birds adopt the same nesting area, nest site, and winter quarters during successive seasons?

For how many broods will one pair remain mated, and which bird, if not both, is attracted next year to the old nesting site?

How far from their nests do birds forage for food; and, after the young have left the nest, will the parent birds bring them to the feeding and trapping station?

How long do birds live?

A minimum of 100,000 banded birds is planned, from which it is hoped that valuable information will be obtained in regard to the habits of migratory birds.

The soy bean has an important place among soiling crops. Having a high protein value, the crop may be fed to good advantage with less nitrogenous crops, such as corn, sorghum, Sudan grass, and millet.

Studies Losses During Ensiling of Corn Caused by Leaching and Fermentation

Every farmer who has a silo knows that some change takes place in the substance of the corn or other crop conserved by this means, and it is generally assumed that some loss in substance of both moist and dry matter takes place as a result of fermentation and leaching. To ascertain as definitely as possible the amount of this loss, its causes, and means for wholly or partially preventing it, the Dairy Division of the United States Department of Agriculture has, been conducting a series of experiments. The results of two years' tests are covered in a professional paper, Department Bulletin 953, Nitrogen and Other Losses During the Ensiling of Corn.

Samples of Silage Analyzed.

Samples of silage in cheesecloth sacks were buried at various depths and positions in a silo 42 feet high by 14 feet in diameter, holding approximately 150 tons. The bags were weighed when put in, and samples of the silage analyzed. When the bags were reached in feeding out the silo the contents were again weighed and analyzed.

The two years' work furnishes evidence of a downwash of the juice in the silo carrying with it soluble food materials, so that the silage in the lower part of the silo may gain in food material at the expense of the upper part. There was an average loss for all the bags of nearly 10 per cent of the dry matter, which apparently is due largely to the fermentation of the carbohydrates and to the carrying away of soluble material by the juice. The sugars almost entirely disappeared. There was a considerable loss of crude fiber and of the furfurol-yielding bodies. There was a loss in total nitrogen, which was larger when the corn put into the silo was immature than when mature corn was used. It is probable that this loss is due largely, if not entirely, to the nitrogenous compounds in the juice. The albuminoid nitrogen suffered a loss of over 50 per cent, while the nonalbuminoid forms increased several times their original weight.

There was a gain in ether extract, probably due to the formation of new ether-soluble bodies. The second season nearly 10,000 pounds of juice escaped from the silo. This juice carried a considerable percentage of nitrogen of various forms which in ordinary practice would remain in the silo.

The results are as yet incomplete, and the tests are being continued.

NEW PUBLICATIONS.

The following publications were issued by the United States Department of Agriculture during the week ended July 2, 1921:

Making American Cheese on the Farm. Farmers' Bulletin 1191.

Organization of Rural Community Buildings. Farmers' Bulletin 1192.

Potato Production in the South. Farmers' Bulletin 1205.

The Corn Earworm as an Enemy of Vetch. Farmers' Bulletin 1206.

Damping-off in Forest Nurseries. (Professional Paper.) Department Bulletin 934.

Regional Development of Pulpwood Resources of the Tongass National Forest, Alaska. (Professional Paper.) Department Bulletin 950.

The Work of the Scottsbluff Reclamation Project Experiment Farm in 1918 and 1919. Department Circular 173.

The Occurrence of Wheat Downy Mildew in the United States. Department Circular 136.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C., as long as the supply will permit. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publications desired. For example: Farmers' Bulletin 1205; Department Bulletin 950; Department Circular 136.

Children of Wheeling, W. Va., Appear in Unique Milk Parade

Assisted by a local box factory, the school children in Wheeling, W. Va., staged a unique parade in connection with the milk campaign conducted in their city, April 25 to 30. The campaign was organized by the extension service of the University of West Virginia and the Dairy Division of the United States Department of Agriculture, cooperating with the Ohio county farm bureau and the people of Wheeling. The box factory furnished large paper forms representing butter cartons, milk bottles, etc. The children marched in squads of 16 wearing these forms, arranged so that each group of four spelled a word, with four legends to each topic—"Milk," "Butter," "Cheese," "Ice Cream."

One could not help reading, as the parade filed by, that "Milk makes strong bones," or "Butter is rich in vitamines," or "Ice cream is healthful." As an interesting variation, the cottage-cheese children wore headdresses made of green and white crêpe paper to simulate a cottage-cheese salad, and bore their legends on a large pasteboard cracker hanging from their necks.

A conspicuous feature of the Wheeling milk campaign was staged in the heart of the business and theater district. A billboard advertising company donated its space at this point for a legend on the use of more milk. At 8 o'clock in the evening two painters appeared to work on the sign. One wore on his back a huge pasteboard milk bottle, the other a big painted baby. Both men were entirely concealed by their signs. They attracted so much attention that in a few minutes the streets were filled with hundreds of people craning their necks to see them; a traffic jam ensued, with the result that the milk message was blazed before an audience of gratifying proportions.

PIMIENTO-PEPPER GROWING SUCCESS IN GIRLS' CLUBS

One of the aims in the club work among the boys and girls of the 15 Southern States, conducted by the United States Dairy Association in cooperation with the State Agricultural Colleges, has been to foster the introduction and growth of crops for which there is a wide and steady demand, or for which a demand can be easily built up locally. The Spanish pimiento, formerly imported from Spain, is an example.

Club girls in the South were first interested about six years ago in growing pimientos by way of variety in their club gardens. Their work gave an impetus to local use of the peppers, both fresh and canned, and they shortly found that the pimiento was a valuable addition to chutney, creole sauce, Dixie relish, pepper relish, catsup, and similar products which found a ready market. In 1919 Southern club girls prepared over 120,000 pints of canned goods in which pimientos were used, and in 1920 over 200,000 pint jars of whole pimientos and pimiento-flavored relishes. The girls have found that the pimientos may be kept fresh during the winter months by packing them in sawdust which is scrupulously cleaned and thoroughly dry.

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URGES CLOSE COOPERATION BETWEEN FARMERS AND MILLERS

They Have Interests in Common, Says Secretary Wallace.

Broad Policies of Department Enable it Best to Serve Entire Nation—Scientific Research Along Productive Lines to Be Strengthened.

In an address before the Millers National Federation at Chicago June 29, Secretary of Agriculture Wallace again emphasized the necessity of cooperation between the producers on the farm and the people who handle farm products. He said, in part:

"I am very glad to have an opportunity to meet with the representative millers of the Nation. Milling the grain is a very necessary part of the business of feeding the world. The grain farmers and the millers are dependent upon one another. They have interests in common. The milling industry is one of the essential factors in the business of getting the grain from the farmer's field to the consumer's table. The producer, the elevator man, the railroad, the miller, the wholesaler, and the retailer—all are a part of the machine we have built up. If any one of these fail in the work which properly belongs to him, or if he fails to do this work in an efficient way, then all suffer. Each has his own problems, peculiar to his particular business; but all have a vital interest in the larger problems which affect the industry as a whole, and all have a direct interest in the welfare of each one.

The Miller Is Interested in Production.

"The miller can not continue in business unless he has wheat to mill and enough of it to keep his mill running economically. Therefore, he has a very direct interest in wheat production; and not only in production, but in quality of production. The better the varieties of wheat, the more uniform the grades, the easier it is for the miller to handle it. He is concerned in everything which tends to improve the quality. He wants clean wheat of high milling value, free from foreign materials which impair the quality of the flour. He is, therefore, interested not alone in better varieties but in cultural methods. He wants to be able to pay a price for this wheat which will maintain or stimulate production. Naturally, he is concerned with everything which affects the quality of the crop or the yield.

"The wheat grower has a very direct interest in the milling industry. Every improvement which enables the miller to decrease his milling cost or improve the quality of the flour is a benefit to the wheat grower as well as to the miller. Everything which adversely affects the milling industry is a matter of concern to the grower. The interests of the two are practically identical. Both are essential parts of one business. If one suffers the other suffers.

"It is to the interest of the wheat grower and, indeed, it is to the interest of all of our people that the largest possible amount of our wheat be milled at home, both because that promotes home industry and because it retains within our own borders the by-products of milling, which are fed to live stock and finally returned in large part to the land, thus enabling us to conserve the fertility of our soil, upon which the very life of the Nation depends.

The Promotion of Agriculture.

"The duty of the Department of Agriculture is to promote agriculture in its broadest sense. Consequently, the department desires to be of the greatest possible help to the producers and manufacturers both in the way of improving so far as possible the milling qualities of our wheat through better varieties, encouraging uniform grades, fighting weeds, rusts and other diseases which reduce the yield or lower the quality, as well as by doing everything it can to promote the orderly marketing of the wheat at the lowest possible cost, and by lending its assistance to the milling industry in improving milling methods and reducing milling costs.

"In times past there has been a tendency upon the part of some farmers to

(*Continued on page 8.*)

MANY RECEIVE BENEFITS OF WEATHER BUREAU'S SERVICE

Daily Forecasts Are Among the Oldest Features But Others Have Been Added.

Effect of Weather Upon Business of Farmer, Truck Grower, Stockman, Planter, and Dealer in Perishable Products Studied by Bureau.

It is quite probable that the Weather Bureau of the United States Department of Agriculture is performing services unknown to you, of which you might be availing yourself with profit. The daily weather forecast appearing in the corner of the morning and evening paper is but one of many services. If you do not know of the others it will be worth while to read about them, particularly if you are a farmer, truck gardener, stockman, planter, or dealer in perishable products, for the Weather Bureau makes the effect of the weather on these businesses its constant concern. The daily "prophesies" are among the oldest features of the service, but other forecasts have been added from time to time, so that the list now contains many surprises to the average reader.

Day-to-day forecasts are issued 36 to 48 hours in advance. These relate to the general weather, temperature, and wind conditions for the various State units. The forecasts are issued at approximately 9.30 a. m. and 9 p. m. The first of these is given general distribution through the display of weather and temperature flags, the telephone, printed cards and bulletins, and the afternoon press; the second one is distributed mainly through the various press associations for appearance in the morning newspapers.

Indicate Weather for Week Ahead.

Weekly forecasts are issued Saturday of each week for larger areas than the day-to-day forecasts, and set forth the expected general conditions of the weather for that period in advance. These are disseminated largely through

the press, but also through mailed cards and bulletins.

Local forecasts are issued daily by the officials of the more important Weather Bureau stations for their respective regions. These include a statement as to the probable weather, temperature, and wind, and during the winter months, the probable minimum temperature.

Warnings of violent and severe storm conditions at sea are given in the interest of navigation of the coastal waters, the Caribbean Sea, the Gulf of Mexico, the Great Lakes, and the region around the Hawaiian Islands. The advices cover also storm conditions of only moderate intensity for localities in which the operation of small craft is involved. On the occasion of violent storms on the Lakes or in the Gulf no means is spared to spread the advices and warnings as far in advance as possible. Warnings are broadcasted by wireless to ships afloat.

River and flood warnings: This service is of great value to the commercial, industrial, and agricultural interests in whatever regions are inundated. It always is effective in saving vast amounts of property, and in some cases great saving of life also results.

Valuable Aid to Food Shippers.

Shippers' forecasts: During the winter particularly this service is of special benefit to those concerned in the movement of perishable products. Commission merchants, shippers, and agents handling commodities of this character are advised in advance of temperatures detrimental to perishable products and to which shipments in particular directions are likely to be exposed. This enables railroad men and others interested to properly protect shipments by heating or icing cars, and in other ways to mitigate the losses and claims which would result from damage in shipment.

The foregoing important services of the bureau bear only indirectly upon the agricultural welfare of the Nation. The services listed below, however, are specifically beneficial to agriculture.

Frost warnings and special fruit frost service, alfalfa warnings, etc.: It has been conclusively demonstrated that the damages by spring frosts in the horticultural sections of the country can be greatly mitigated, or even prevented entirely, by proper methods of artificially heating the orchards. The Weather Bureau undertakes to tell the orchardist when frosts are coming, what the probable minimum temperature will be, and even to specify the time to light the orchard fires and to perform other operations. A like service is extended to trucking interests, sugarcane growers, and many other agricultural interests which may be benefited by forewarnings of early or late frosts and of atmospheric conditions detrimental to them.

Timely Warnings for Stockmen.

Advices of weather conditions favoring the cutting and harvesting of alfalfa, and operations of like kind, is another specific service in the interest of agriculture.

Cattle region service: This is a service operated during the summer season especially. Authentic information is disseminated concerning weather, especially precipitation conditions over the stock ranges and stock-raising districts of the West, enabling stockmen to determine the best distribution of their cattle in the grazing districts and the places where grazing is most plentiful.

Stock warning service: This is closely allied to the cattle region service. The Weather Bureau advises the stock-raising interests of the approach and severity of cold waves, storms, and atmospheric conditions injurious to cattle. With ample warning in advance, the weak stock can be brought to shelter, and enormous losses prevented.

Fire weather service: The studies of the foresters and Weather Bureau employees have resulted in supplying a service on the part of the Weather Bureau to the National and State organizations which is helpful in the prevention and control of forest fires. Its advices to forest-fire fighting agencies promote the most effective distribution of fire prevention and suppression agencies.

Weather and crop bulletin: The object of this bulletin, issued weekly, is to get the fullest possible information to the agricultural interests as to the weather conditions week by week. The effect of the weather on crop conditions is also mentioned. The bulletin is issued at a great many outlying stations, and also at Washington.

Highway weather service: This service, which is of a general character, was inaugurated in a limited way as an outgrowth of war conditions. It consists of adding to the forecast messages and bulletins issued by the bureau at a number of its stations, advices as to the conditions of the principal highways of travel. This information is of interest to large numbers of highway users, but owing to limited funds the service is not extensive.

Any person or concern desiring to secure the benefit of one or more of these services should send a request to the Weather Bureau, Washington, D. C., stating as specifically as possible the use that he will make of the information asked or the character of the interests that will be served thereby.

A BRIEF REVIEW OF THE ARGENTINE DAIRY INDUSTRY

Enormous Increase in Exports of Butter and Cheese in Last Decade.

Production of Dairy Products Unevenly Distributed—Few Strictly Dairy Cows Kept, but Number Is Increasing—Market for American Cattle and Dairy Equipment.

The following article was prepared by D. S. Bullock, Agricultural Trade Commissioner of the Bureau of Markets and Crop Estimates, who is located in Argentina as a representative of the United States Department of Agriculture, to study the live-stock industries and promote the marketing of American purebred stock in that country:

"To write anything like a comprehensive review of the dairy industry of the Argentine Republic and give accurate data on production is an impossibility because accurate statistics are not available. There is no legal inspection or supervision of creameries and cheese factories and no method of requiring reports of products manufactured. There is, however, an accurate record of all products exported, but figures on local consumption and total production are only rough estimates.

"The most reliable statistics of production that we have are furnished by the Office of Rural Economy and Statistics of the Department of Agriculture of Argentina. The following tables 1, 2, and 3, were published in the January and February numbers of "La Industria Lechera" (The Dairy Industry), the official organ of the "Centro Nacional de la Industria Lechera." This organization is in reality the National Dairy Association of Argentina. It stands for all that is progressive and up-to-date in the dairy industry and is making every possible effort to advance the industry.

Table 1.—Production of Dairy Products in Argentina in 1919.

	Butter.	Cheese.	Casein.
	Pounds.	*Pounds.*	*Pounds.*
Federal District	30,595,853	182,559	384,617
Provinces:			
Buenos Aires	13,892,507	34,973,470	8,643,474
Santa Fe	11,251,937	7,833,590	3,580,539
Cordoba	255,859	3,806,273	1,463,570
Entre Rios	403,518	881,452	41,098
	56,399,704	47,747,346	14,113,102
Other Provinces and Territories	433,499	2,146,182	37,864
Grand total	56,833,203	49,893,528	14,150,966

"Tables 1 and 2 indicate that the production of dairy products in Argentina is very unevenly distributed. But it is only natural that the production and manufacture of these products should be concentrated in particular sections, for

here are found three principal factors that make the industry—(*a*) more than 66 per cent of the cattle, (*b*) nearly three-fourths of the consuming public (72 per cent), and (*c*) the commercial center and ports of exportation. The influence of the first two factors has been known since the beginning of the dairy industry. The importance of the third has not shown itself until the value of the products was known to the outside world and an export trade was developed.

Table 2.—Distribution of Establishments Manufacturing Dairy Products in Argentina.

Provinces and territories.	Factories idle.	Factories operating.	Cream stations.	Butter factories.	Cheese factories.	Mixed.
Federal District		13		13		
Buenos Aires	322	1,705	974	81	345	305
Santa Fe	35	714	432	22	103	157
Cordoba	12	352	144	2	108	128
Entre Rios	41	356	38	1	154	153
Catamarca		63			52	10
Corrientes		89			74	15
La Rioja		43			18	25
Mendoza	7	17			12	5
Salta	45	45			34	11
Santiago del Estero		32	1		21	10
San Juan		15			9	6
San Luis	15	113			68	45
Tucuman	12	68	1		59	8
Jujuy		23	1		21	3
Pampa	4	123	59		12	42
Chaco		9			5	4
Chubut		33	2		1	30
Formosa		16			11	
Misioneca		3			2	
Neuquen	22				14	
Rio Negro	31				12	1
Total	463	3,886	1,632	119	1,135	1,000

"The region referred to contains all the butter factories; 1,558 out of 1,632, or 95 per cent of the cream stations; 710 out of 1,135, or 63 per cent of the cheese factories; and 743 out of 1,000, or 74 per cent of the combined factories.

"A comparison of the production shows even more plainly than does the number of factories the highly centralized character of the industry. According to the figures this area manufactures 99 per cent of the butter, 96 per cent of the cheese, and practically all of the casein. The great majority of the factories in the outlying districts are comparative small.

Table 3.—Exportation of dairy products in 1920 classified by countries of destination.

[Compiled from export permits granted by the customhouses.]

Destination.	Butter.	Cheese.[1]	Cream.	Condensed milk.	Dried milk.	Sterilized milk.	Milk powder.	Sweet preserve of milk.	Chocolate and milk preserve.
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*	*Lbs.*
England	25,543,199	40,812		2,535	7,992				
France	2,371,356	160,917				595			
Italy	2,954,054	5,545							
United States	5,297,614	12,103,523		51	55	247			
Paraguay	80,860	305,943				53			
Brazil	79,631	503,919			8,818	265			
Uruguay	45,792	97,108	447,267	6,504	28,660	159	6,614	5,864	1,521
Chile	478,198	260,365				7,235			
Peru	432,831	102,412				102,146	661	1,235	
Spain	127,726	49,747			1,102				254
Belgium	1,240,270	135,142		50,706					
Bolivia	128,339	9,982				13		2,307	
Holland	523,293			36,508		12,081			
South Africa	77,518								
Sweden	216								
Greece	1,545	556							
Norway	976,737	3,071							
Switzerland	525,709								
Jamaica	37,796	1,133							
Turkey	996								
Japan	441								
Falkland Islands	14,480	789							
Equador		10,758							
Germany	54,070	22,906		135,415	7,374	2,340	198	904	904
Egypt	2,734	3,254							
Straits Settlements	110								
India	926								
Austria	255,293	1,512							
Cuba		3,340							
Mexico	265	3,181		507		5,966	608	5,223	
Total	41,249,487	13,860,915	447,267	232,226	53,984	141,324	8,081	15,533	2,679

[1] In addition to this there were 2,000,000 pounds of casein, the destination of which is not known.

"The three products of the dairy industry which comprised the great bulk of the exports were butter, casein, and cheese. Of the butter exported, England took more than half. The United States, according to the customhouse records of Argentina, bought from our sister Republic a total of 5,298,000 pounds of butter and 12,104,000 pounds of cheese. In addition, we also bought considerable quantities of casein not shown in the figures. Sweet preserve of milk is made from milk boiled and sweetened. It is something like sweet condensed milk, but is brownish in color and is cooked in an open kettle. Chocolate and milk preserve is made with milk, chocolate, and sugar.

"The following brief summary of Argentina's exports of butter and cheese for the past 10 years gives some idea of the rapid growth of the dairy business during that period:

Table 4.—Exports of Butter and Cheese from Argentina 1910–1919.

[Compiled from the Official Publication "Anuario del Comercio Exterior de la Republica Argentina.]

Years.	Butter.	Cheese.
	Pounds.	*Pounds.*
1910	6,342,634	800
1911	3,076,813	1,142
1912	8,106,314	4,281
1913	8,342,206	16,186
1914	7,675,661	8,216
1915	10,191,152	13,344
1916	12,502,172	502,012
1917	21,671,558	6,015,015
1918	41,821,262	14,177,253
1919	44,881,247	19,561,769

"These figures show a really remarkable growth in the export trade. From approximately 6,000,000 pounds of butter in 1910 it has increased to more than 40,000,000 pounds in 1920. The exportation of butter is now practically seven times what it was in 1910.

"In 1910 only 800 pounds of cheese were exported, a quantity hardly worth mentioning. In 1920 more than 13,000,000 pounds were sold out of the country.

"Three classes of people in the United States should be particularly interested in this great growth of the dairy industry in Argentina. They are: First, the American dairy farmer; second, the breeder of purebred dairy cattle; and, third, the manufacturers of dairy machinery.

"The American dairyman is interested because Argentine dairy products are in open competition with American products in the world's markets. Just what this will mean in the future, and how it will affect the price of these products in the home market, time alone will tell. One thing is certain and that is that the dairy business has come to stay in Argentina and that it is bound to grow in the future.

"This growth of the dairy industry is the phase that is of interest to the breeder of purebred dairy cattle. If the industry continues to grow, as there is every reason to believe it will, cattle of the distinctly dairy breeds will certainly increase in numbers in that coun-

(*Continued on page 8.*)

Weekly News Letter

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

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NEW CHIEF OF BUREAU OF MARKETS AND CROP ESTIMATES

The Secretary of Agriculture announces the appointment of Dr. H. C. Taylor as Chief of the Bureau of Markets and Crop Estimates, succeeding George Livingston, who resigned under date of June 8. Dr. Taylor has been Chief of the Office of Farm Management and Farm Economics for the last 2½ years. For some time the matter of bringing all of the economic work of the Department of Agriculture into one bureau has been under consideration. The first step was taken when the Bureau of Markets and the Bureau of Crop Estimates were combined, beginning July 1 of this year. While the Office of Farm Management can not be merged into this new bureau at present, the work of the two bureaus can be related to a considerable extent and some economies effected.

Because of the resignation of Mr. Livingston, this seems to be an appropriate time to begin the coordination of these two bureaus preparatory to merging them completely at the earliest possible date. The general purpose is to bring into one bureau the work the department is doing in agricultural economics. Farm management and the marketing of farm crops are intimately related and it is believed that the combination of these three bureaus will result in increasingly valuable and efficient service to the farmers of the country. There will be no radical changes in the work of these bureaus as it has been going forward during the past year. Such changes as may be made in the future will come as the result of painstaking study and investigation. Mr. G. W. Forster, Assistant Chief of the Office of Farm Management and Farm Economics, will be Acting Chief of that office.

PROTECTING AMERICAN CROP PLANTS FROM ALIEN ENEMIES

The Federal Government expends several million dollars annually in efforts to combat serious insects and plant diseases that have been brought here from foreign countries. Several thousand insects have been listed in foreign countries which are known to injure crops and which have not yet been brought to our shores. Many foreign-plant diseases are also known to occur, and it is of the utmost importance to prevent their reaching us. The Federal Horticultural Board, an independent branch of the Department of Agriculture, is endeavoring to keep as many of these alien enemies out of the country as practicable. Special quarantines have been issued and rigid attention is being given to the inspection of plants reaching us so as to avoid the introduction of the pests.

The Bureau of Plant Industry is desirous of encouraging in every way the production of promising new crops in this country, and its Office of Foreign Seed and Plant Introduction is cooperating with horticulturists and plant growers in aiding them in introducing new varieties of plants in such fashion that they will not bring in any diseases or insects. It is often necessary to introduce plants in very small numbers and to grow them for a considerable time either in greenhouses or under very special conditions out of doors to make sure that all pests have been removed. When it is certain that the plants are freed of insects or diseases they may then be propagated more extensively and distributed to collaborators. In this way new crops are ntroduced without danger to the country.

SIBERIAN DUST STORM FELT BY VESSEL IN YELLOW SEA

In connection with its marine service, the Weather Bureau, in the United States Department of Agriculture, receives constant reports from vessels all over the world. There are over 2,000 vessels of various nationalities on the list from whose reports valuable information is gleaned as to weather conditions and natural phenomena. Sometimes this data serves to chart the route of storms or air currents, sometimes it is useful as a matter of record, and sometimes it serves to verify information from other sources and to prove the extent of the area affected by some atmospheric or other disturbance.

Recently one of our American merchant vessels, the *Santa Rosalia*, sent in three successive reports on its trip from Karatsu, Japan, to Taku, China, and thence to Shanghai, en route to Port Townsend. Accompanying its May report was a small envelope full of a fine yellowish gray dust, gathered up from the decks where it had fallen. A note on the subject explained that the air was so full of the dust that sailing was hazardous, owing to impaired visibility. This was on April 13, in latitude 37° 25′ N., longitude 122° 50′ E., a point in the Yellow Sea near Port Arthur, on the peninsula now called Chosen, formerly Korea.

Investigation revealed that the same week there had been a violent continental cyclone or dust storm, many miles to the north in Mongolia, on the border of Siberia. Corroboration of the fact that quantities of this dust, sufficient to impede vessels, could be blown as far south as the East China and Yellow Seas was valuable and interesting to scientific workers in this field all over the world.

BUREAUS OF MARKETS AND CROP ESTIMATES COMBINED

As provided for by an act of Congress, the Bureau of Markets and the Bureau of Crop Estimates of the United States Department of Agriculture were combined and became one organization July 1. The new bureau is now known as the Bureau of Markets and Crop Estimates.

Preparations for the merging of these two important branches of the department have been going forward for several months past, and the change was effected without any perceptible interruption in the business of either organization. Leon M. Estabrook, who had been chief of the Bureau of Crop Estimates since 1913, was transferred April 1 to the Bureau of Markets as associate chief in order that he might study the personnel of both bureaus and work out ways and means of combining the two to eliminate any possible duplication of work.

In combining the two units of the department careful plans have been made for the future development of the new bureau, so that it can be of the greatest benefit to the producers and marketing agencies throughout the country. It will work with farm organizations that need Federal aid in securing dependable crop and market news and information on supply and demand.

Following the resignation of George Livingston, who has been head of the Bureau of Markets since 1920, Dr. H. C. Taylor, Chief of the Office of Farm Management, has been appointed by Secretary of Agriculture Wallace.

Climate, Soil, Season, and Other Factors Influence Composition of Cotton Seed

To guide producers, dealers, and crushers of cotton seed so that they may know more nearly the content of the product in which they are dealing and be better able to judge its value, the United States Department of Agriculture has published Department Bulletin 948, Composition of Cotton Seed. The bulletin sets forth data showing as nearly as possible approximate oil and meal yield in each county of the cotton belt. Records of the analyses of 46,029 samples studied during the five-season period from 1914–15 to 1918–19, inclusive, are given in tables in the bulletin.

Early Seed Has Less Oil.

The composition of cotton seed, according to the bulletin, is influenced by climate, soil, season, fertilizer, and variety, as well as by methods of treatment of the seed before and after the cotton is picked. These factors vary so much that seed is of different value, not only in widely separated sections and in different years, but in a particular community at the same time. Early seed, however, usually has greater moisture and a smaller oil content, and late seed is usually affected adversely by weather conditions.

The average oil content for the United States during the three seasons from 1916–17 to 1918–19 was 306 pounds per ton of seed, and the average meal content for the same period was 978 pounds per ton of seed. During this period the seed produced in Mississippi, North Carolina, and South Carolina yielded more than 320 pounds of oil per ton, and the seed produced in Louisiana, Mississippi, and Oklahoma produced more than 1,000 pounds of meal per ton.

In the collection of the data used in the bulletin it became apparent that many lots of seed came to market in a badly damaged condition. This source of loss, which is largely preventable by proper care before and after ginning, the department specialists say, is an economic loss for three years. The oil from damaged seed is of lower value, having a higher refining loss and producing a lower grade of refined oil; the meal from damaged seed often is not fit for feeding purposes and can be used only for fertilizer; and damaged seed in the warehouse in many instances causes seed to heat, which otherwise would remain sound.

A FEW INFERIOR FILLERS REASON TO REJECT EGGS

Several car-lot shipments of eggs from the Pacific coast were recently rejected at New York because of the use of inferior fillers, which had absorbed moisture and become soft and weak. In some of the shipments the inferior fillers were scattered throughout the car. Of the 15 cases of eggs inspected in one car, one case contained one inferior filler, another two, a third five, and in a fifth all the fillers were inferior. The remaining 10 cases contained high-grade fillers which were firm and sound.

The use of new No. 1 fillers and flats is a prime requisite in packing eggs for shipment even the shortest distance, say marketing experts of the Bureau of Markets, United States Department of Agriculture. In the instance in point, the quality of the eggs was not questioned because of any decline in the market while the shipments were in transit. The eggs were refused solely because the inferior fillers made it possible under a technical ruling to reject the eggs at the grade specified in the transaction.

CABBAGE ACREAGE LESS BUT MUSKMELONS MORE THAN 1920

The commercial acreage of late cabbage in the United States is approximately 9 per cent less than the acreage harvested last year, according to the forecast compiled by the Bureau of Markets and Crop Estimates, United States Department of Agriculture. The 13 States in which the bulk of the commercial cabbage crop is grown planted 59,886 acres this year as compared with 65,610 acres last year. New York leads the States in total acreage, having 25,600 acres, which is 12 per cent less than last year. Wisconsin is second with 14,404 acres. This State is the only one of the 13 which has an increase in acreage over last year, the increase being 3 per cent. Colorado, Indiana, and Kentucky report the same acreages for both years, while Minnesota shows the greatest decrease, which is 24 per cent less than last year.

The commercial acreage of muskmelons in the late-producing States, of which there are 12, show an increase of 14 per cent over last year, according to the bureau's report. The acreage harvested in 1920 was 27,476, while it is estimated that 31,215 acres were planted in the 12 States this year. In 1920 Colorado led with 8,281 acres, but this year, the report shows, that State dropped to second place and Arkansas leads with 10,655 acres. Colorado shows a decrease of 15 per cent in acreage compared with last year, while Arkansas shows an increase of 61 per cent, the greatest gain made in any one State. In addition to Colorado, both Illinois and Indiana reported a decrease. In Michigan, New York, and Tennessee the acreage this year is approximately the same as that harvested in 1920. The other States, in addition to Arkansas, which reported an increase are: Delaware, 32 per cent; Missouri, 15 per cent; Washington, 11 per cent; Iowa and Maryland, 5 per cent.

The acreage in early-producing States, reported last month by the bureau, shows a slight decrease over the preceding year. In the spring of 1921 there were 39,595 acres planted to early muskmelons, as compared with 43,191 acres in 1920, and 36,937 acres in 1919.

STRENGTHEN DEPARTMENT'S SERVICE IN ECONOMIC LINES

Several meetings of the Committee on Economics, recently appointed in the Department of Agriculture by Secretary Wallace, were held last week to consider pending legislation affecting agriculture. The committee formed certain definite conclusions with respect to reorganizing the forces and redirecting the activities of the department with a view to more efficient service along economic lines. A more complete separation of regulatory work from research and service activities was recommended by the committee, some of the changes proposed indicating a far-reaching effect on the future organization and work of the Bureau of Markets and Crop Estimates. Dean T. F. Hunt of California, Prof. G. I. Christie of Indiana, Prof. G. F. Warren of Cornell, Prof. Andrew Boss of Minnesota, and Prof. T. F. Cooper of Kentucky took part in the discussions and joined in the recommendations.

SWEET POTATOES INTEREST MANY.

Sweet potatoes are interesting more farmers in Allendale County, S. C., than any of the new crops. The county agent reports that more curing houses will be needed. The crop has kept almost perfectly. One house has lost less than 5 per cent from rot and poor grading.

Cotton Boll Weevil Infestation Heavy—Many Parts of South Suffer, Reports Show

How heavy is the weevil infestation this year is a question received from farmers from all portions of the Cotton Belt early each summer and is naturally one of considerable interest to all men connected with the cotton industry. Consequently, for a number of years back the Delta Laboratory of the Bureau of Entomology of the United States Department of Agriculture at Tallulah, La., has been conducting a series of observations which afford a fair degree of comparison of the infestations developing each season. This consists of a series of surveys made on 12 plantations in Madison Parish, La., the same points being taken each year. A specified number of plants are examined at each point under observation and the number of weevils found is noted. In the course of this survey, which is usually made about the first week of June, something over 200,000 plants are examined each year and from these is computed the ratio of cotton plants per weevil. The following table gives the records from 1915 to date:

Year.	Plants per weevil.	Year.	Plants per weevil.
1915	177	1919	245
1916	100	1920	221
1917	5,525	1921	152
1918	441		

It will be noted from this that the infestation for the present year is the heaviest which has been experienced in any of the seasons on which the department has a record, except that of 1916, and is very nearly as heavy as it was that year. In addition, hibernation cage tests have been conducted as usual and show a very high percentage of survival this season. Furthermore, the department is now receiving reports from its men from practically all portions of the Cotton Belt and it is quite obvious that there is an unusually severe infestation in nearly all portions of the South.

Influenced By Weather Conditions.

These comments, of course, apply only to the infestation of hibernated weevils, and this infestation does not necessarily determine the degree of damage which will be experienced throughout the season, because weather conditions may operate to offset this heavy initial infestation and thus reduce the damage later. However, it means simply this: If the injury by the weevil is to be no more than normal, the weather must be abnormally unfavorable to the weevil and abnormally favorable to the cotton plant. Thus the chances are against the farmer at the outset.

NEW FIELD STATIONS FOR BOLL-WEEVIL CONTROL

The rapid expansion of weevil poisoning throughout the Southern States has made necessary the establishment of a number of new field stations by the Bureau of Entomology, United States Department of Agriculture, throughout the weevil-infested territory. These have been located to serve as wide a range of districts as possible, and with special reference to securing points representative of the most important variations in local conditions which have a direct bearing on weevil poisoning.

Usually two or more men are connected with each station, one of whom will be engaged upon research work to determine the most efficient methods of poisoning the weevil under conditions represented by that station. The other will be engaged in surveying weevil and cotton conditions throughout the surrounding district and, in connection with this work, will be available to assist and advise all farmers who are poisoning. It is the intention of the Department of Agriculture to try to reach every individual farmer who is poisoning, and assist him in planning his campaign, assembling and starting his dusting machines, etc.

The stations located so far are as follows: Fairfax, S. C.; Waynesboro, Ga.; Americus, Ga.; Demopolis, Ala.; Tuscaloosa, Ala.; Brookhaven, Miss.; Victoria, Tex.; Denton, Tex.; Taylor, Tex.; San Benito, Tex.

In addition, a number of men are assigned to more or less irregular duty in the districts not accessible to these stations. Anyone desiring assistance in weevil poisoning should correspond with the Delta Laboratory, Tallulah, La., and they will be placed in contact with the nearest representative.

POTATO PRODUCTION IN THE SOUTH.

The importance of the potato crop in the South is due to its market value rather than its magnitude, for owing to the season in which it is harvested it commands a better price, usually, than the late crop in the North. The wide divergence of seasonal conditions in the South, coupled with a long-growing season, makes it possible to plant and harvest potatoes in some locality in practically every month in the year.

Owing to varying climatic conditions, due to both latitude and altitude, there are three distinct potato-crop seasons in the Southern States. These are the early or truck crop, the late or main crop, and the fall crop, which last may be divided into a second crop and a fall crop proper. The early or truck crop is confined largely to well-defined production centers. Because practically all the early crop is marketed direct from the field when it is in more or less immature condition, the question of packages and of shipping facilities is important. This subject, and others of interest and value to southern potato growers, are discussed in Farmers' Bulletin 1205, entitled Potato Production in the South, just issued by the United States Department of Agriculture. This bulletin may be obtained free upon application to the Division of Publications.

OLD WHITIE, A NOTORIOUS COLORADO WOLF, MEETS DEATH

Details of the capture and death of "Old White," the ferocious leader of a pack of wolves that for years caused great destruction among live stock on Bear Springs Mesa, Colo., are contained in a report received recently by the Bureau of Biological Survey, United States Department of Agriculture. The capture lacked some of the more spectacular elements that marked the passing of the now famous "Custer Wolf," but in many ways it is looked upon as among the notable kills made through the skill and patience of Government hunters in their work of ridding the cattle ranges of the West of predatory animals.

Early in the spring, by the clever strategy of one of the hunters, the mate of this animal and one of the leaders of the pack was captured, and it was thought that "Old White" would then fall a ready victim. But he proved more difficult, for although several good chances to get the old fellow occurred, on each trip to the Government traps he would "step lucky," as the hunter described it. Finally the hunter selected a favorable spot and placed four traps in a blind set, and it was in these that the marauder was caught.

"Old White" has a black history and caused losses in live stock amounting to many thousands of dollars. For 12 years he roamed the Bear Springs Mesa country. One rancher alone lost about $6,000 worth of live stock through his depredations.

Amendment to Quarantine Extends Gipsy Moth Area; Brown-Tail Recedes

Regulation 3, "Infested Areas," of the regulations supplemental to quarantine No. 45 on account of the gipsy moth and the brown-tail moth has been modified by the Secretary of Agriculture by changing the quarantine lines to correspond with the spread or recession of these insects during the past year.

In 1920 there was considerably more spread westward of the gipsy moth than has been the case for several previous years. This extension involves the inclusion of 62 new towns, as follows:

New Hampshire.—Northumberland, Lancaster, Whitefield, Dalton, and Luneuberg.

Vermont.—Danville, Peacham, Marshfield, Plainfield, Groton, Orange, Topsham, West Fairlee, Stafford, Royalton, Barnard, Pomfret, Bridgewater, West Windsor, Cavendish, Weston, Andover, Landgrove, Londonderry, Windham, Windhall, Jamaica, Wardsboro, Dover, Newfane, Dummerston, Wilmington, Marlboro, Brattleboro, and Vernon.

Massachusetts.—Greenfield, Deerfield, Montague, Leverett, Shutesbury, Pelham, Amherst, Hadley, South Hadley, Granby, Belchertown, Enfield, Ludlow, Chicopee, Holyoke, West Springfield, Wilbraham, Agawam, Longmeadow, East Longmeadow, and Hampden.

Connecticut.—Somers, Stafford, Windham, Groton, and Stonington.

It has been found possible to eliminate the town of Berlin, N. H., from the quarantine.

As has been the case during recent years, there has been a reduction in the area infested by the brown-tail moth. A good deal of this decrease is due to the energy of the citizens in clean-up work, to the action of parasites, and to the heavy winter killing of the larvæ in the webs. It has been found possible this year to eliminate the following towns in New Hampshire from the area quarantined on account of this pest: Campton, Nelson, Harrisville, Dublin, Jaffrey, Sullivan, Roxbury, Marlboro, Troy, and Fitzwilliam.

NEW PUBLICATIONS ISSUED.

The following publications were issued by the United States Department of Agriculture during the week ended July 9, 1921:

Tuberculosis of Fowls (Farmers' Bulletin 1200).

Wintering and Summer Fattening of Steers in North Carolina. Department Bulletin 954.

The Migratory Bird Treaty Act (Department Circular 182).

Soil Survey of Outagamie County, Wis. (from F. O. Soils. 1918).

Soil Survey of Newberry County, S. C. (from F. O. Soils, 1918).

Soil Survey of the Grass Valley Area, Calif. (from F. O. Soils, 1918).

Service and Regulatory Announcements:

Bureau of Chemistry, Supplement 113.

Insecticide and Fungicide Board, No. 35. Notice Relative to State Insecticide and Fungicide Laws.

A copy of any of the publications listed above, except those otherwise noted, may be obtained free upon application to the Chief of the Division of Publications, United States Department of Agriculture, Washington, D. C., as long as the department's supply lasts. In order to aid the department in giving prompt attention, make your request definite by specifying the distinct class and number of publications desired. After the department's supply is exhausted, publications can still be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., but by purchase only. Send all remittances to the Superintendent of Documents direct; not to the Department of Agriculture.

WILL CONSIDER ESTABLISHING FEDERAL GRADES FOR TOBACCO

As a step toward laying the groundwork for drawing up Federal grades for tobacco, the Bureau of Markets and Crop Estimates of the United States Department of Agriculture is arranging for investigations to be conducted in each of the important tobacco-growing regions of the country. The work will finally cover practically every type of tobacco grown in the United States and is expected to lead to the establishment of grades affecting each of them.

Arrangements for the appointment of an investigator in each of the important localities are being completed. Tentative agreement has been made with the State of North Carolina for the employment of an investigator who will gather information to aid in the establishment of grades for "bright leaf," or flue-cured tobacco, a type chiefly grown in that State as well as parts of Virginia, Georgia, and South Carolina. His expenses will be paid by the State.

Similar agreements in the States of Kentucky, Pennsylvania, Massachusetts, and Connecticut are being negotiated. The State of Wisconsin has already employed a man for the purpose of studying the type of tobacco grown there. The information gathered by each of the investigators will be correlated by the Bureau of Markets of the Federal department to be used as the basis for the proposed Federal grades.

Under present trade conditions practically each of the big tobacco buyers has a separate schedule of grades in "bright leaf" running as high as 50 grades. It is possible that under the proposed system of Federal grading there will be only from 4 to 10 grades, depending upon the type of tobacco.

NEW ATTITUDE NEEDED TOWARD REFORESTATION

Forest lands in private ownership present the need for a new conception of property rights in their relation to the public interests. They belong in a sense in the class of public utilities operated on a basis equitable to the owner, but serving the common welfare. The problem of reforestation is serious, recently pointed out Col. W. B. Greeley, chief of the Forest Service, United States Department of Agriculture.

The manufactures of the United States which use wood as their raw material represent one of the most characteristic and successful developments of American business. They include 53 classifications of manufactured products, ranging from sash doors to tobacco pipes. The list embraces furniture, veneers, wooden containers, handles and turned products, agricultural implements, wagons, parts of automobiles and trucks, products which represent an enormous volume of invested capital. Such manufactures consume from 22,000,000,000 to 25,000,000,000 feet of timber annually, which is over four times the total consumption of timber in France for all purposes. Our failure to produce by means of reforestation the raw material on which these industries depends threatens the curtailment and disappearance of these great industries.

There is another phase of this problem which the progressive business man will not overlook. In numerous rural districts farm crops will not grow, but trees will. New Hampshire is a good illustration, since a recent survey shows that 34 per cent of the land area of that State at one time in cultivation has been abandoned for farming purposes. The maintenance of many rural industries and thriving communities depends upon the reforestation of large areas of land which are not suitable for cultivation.

Startling cases of economic and social decline in rural sections have occurred where no productive industry has followed lumbering. Reforestation, widely and generally brought about, is not only the answer to the problem of future timber supply for manufacturers; it will restore a productive industry to many rural districts which would otherwise be without one. It will build up our national strength at the bottom by utilizing the productive energies of Mother Earth.

URGES CLOSE COOPERATION BETWEEN FARMER AND MILLER

(Continued from page 1.)

look upon the people who handle the farmer's products and prepare them for consumption as business antagonists disposed to take advantage of the producer. And also there has been a tendency on the part of some handlers and manufacturers of food products to look upon the farmer as a man whose duty it is to produce grain and live stock up to the limit of his ability and, having produced them, turn them over to the nearest market at whatever price the buyer is willing to pay, and then go home and produce some more. There has been at times a tendency to resent any interest the farmer was inclined to take in the marketing of his products or in their manufacture.

"We have been a Nation of individualists, each disposed to look after his own affairs, depending upon his own efforts, and driving the sharpest possible bargain with the people with whom he had to deal. Gradually we are getting to have a more enlightened view. We are coming to see that our interests are mutual; that conditions which affect one will sooner or later affect all. The spirit of cooperation is growing. In every group there are some intensely selfish individuals who seek every advantage for themselves without regard to the interests of others; but the number of those who take the larger view and see that we are all brothers is growing steadily. And this is one of the most hopeful signs of the present time.

Department Should Help All the People.

"I conceive it to be the duty of the Department of Agriculture to render the greatest possible assistance not alone to the people who live on the farms, but also to the people all along the line who handle farm products and get them to the consumer's table, because only in that way can the department hope to serve the Nation as it should. It is for this reason that the department has taken an active interest in many things which affect the milling industry directly."

The Secretary then spoke of some of the work of the department in its direct relation to the milling industry, dealing especially with the matter of wheat grades, the study of methods of preventing explosions in mills, the introduction and development of new and better varieties of wheat, especially disease resistant strains, the campaign to eradicate rust through destroying barberries, etc. He closed his address by saying:

"In conclusion, let me put even more plainly the thought I have been trying to convey: So long as I am at the head of it, the policy of the Department of Agriculture will be to strengthen our scientific research along production lines, with a view to cheapening production, improving varieties of plants and breeds of live stock, promote knowledge of the best cultural methods, and do everything possible to enable our farmers to compete effectively with the farmers of the world and to grow an abundance of food for our own people.

Strengthen and Extend Research Work.

"In addition to this, every effort will be made to extend scientific research into the large economic field. It is highly necessary to the prosperity of agriculture and to the prosperity of the Nation, that we should market our crops efficiently and get them to the consumer at the lowest possible cost and with the least waste. Therefore, it will be the policy of the department to cooperate in the largest possible way with every agency which has anything to do with the handling, the preparation, and the merchandising of our farm crops in the form of food products.

"We shall welcome every opportunity to cooperate with the millers in helping them to secure the best possible grades of grain for milling, as well as by helping them to improve their methods and enlarge their markets for flour. We shall cooperate in exactly the same way with the packers and with every other agency which has to do with the manufacture and distribution of farm products. We shall extend our work of scientific research into the processes of manufacture and of marketing both at home and abroad.

"We are at the present time reorganizing the economic work of the department, coordinating it and, I think, greatly strengthening it. As time goes on not only the millers, but all other groups and agencies which have to do with the preparation of farm products for food, should be able to get constantly increasing and efficient help through the department. Our work will be of a constructive and thoroughly sympathetic sort.

Help, Not Hamper, Business.

"Surely the time has come when everyone must see that there must be a far larger degree of cooperation between the various large groups in this country which have interests in common; and the effort of the Department of Agriculture—and I feel sure I can say the same of all other departments of the Government—will be, not to interfere with or in any way hamper legitimate business, but to help it in every way possible."

SOY-BEAN HAY EQUALS ALFALFA.

The chief value of soy-bean hay lies in its high content of digestible protein. In feeding value it is superior to red clover or cowpeas and, as indicated by comparative feeding tests, is equal to alfalfa for milk and butter production. Soy-bean hay makes an excellent winter ration for young cattle, sheep, and horses when fed in mixture with other hay or roughage and has been used to good advantage for hogs. The feeding of soy-bean hay alone is not advisable, because its relatively high protein content may cause digestive disturbances.

CALIFORNIA POTATO GROWERS WILL ADOPT U. S. GRADES

At a recent meeting of potato growers of eight counties of southern California held under the auspices of the Los Angeles County Farm Bureau, growers and shippers unanimously adopted the United States potato grades as their standard for grading and marketing during the coming season, the Bureau of Markets, United States Department of Agriculture, has been advised. It is believed that about 20,000 acres were represented and that a large percentage of the potatoes will be properly graded for the first time.

A BRIEF REVIEW OF THE ARGENTINE DAIRY INDUSTRY

(Continued from page 3.)

try. There are at the present time very few strictly dairy cattle in Argentina as compared with the number of beef cattle. A considerable part of the dairy business is being done with cattle which in the United States would be considered too poor to keep for dairy purposes. As dairying increases there is certain to be an increasing demand for good dairy cattle. If the Argentine dairyman can get what he wants from the States at better terms than anywhere else, then this market will be open to the American breeder of purebred dairy cattle.

"Modern dairying demands up-to-date machinery. Here is a good and constantly increasing market for this class of machinery which the American manufacturers have thus far neglected almost entirely. The United States makes the most efficient, practical, and up-to-date dairy machinery of any country in the world and there is no good reason why we should not sell it in Argentina."

North Carolina and Missouri had the same and the largest State yield of cotton lint per acre in 1920, or 275 pounds, while the average for the cotton States was 178.4 pounds, or 37 per cent of the lint in a 500-pound bale, gross weight. The largest yield was 58 per cent of a bale.

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FARM FAMILIES LIVE WELL AND HAVE GREAT VARIETY OF DIET

Produce a Large Part of What They Eat, Which Cheapens Cost of Living.

Milk Is Largely Used but Apparently not as Many Eggs as by City Households—Regional Differences Exist but not as Marked as Formerly.

American farmers seem to be as generously supplied with meat as any class of people. It will seem surprising to city housekeepers that eggs are not used as abundantly on farms as among people at large. Milk is generously used, even though there are fewer children than the average in farm homes. Other healthful dairy products assure farm families decided advantages over other groups. Except in the Southern States, where "quick" breads are often preferred to yeast-raised kinds, wheat bread is the staple. Corn breads are popular everywhere, but are chiefly used to give variety. A relatively large proportion of starchy vegetables was reported and a relatively small quantity of green and succulent kinds, although farm families have the best opportunities for growing vegetables at home.

Study Typical American Farm Homes.

These and other points about farm diet are brought out in studies recently made by the Office of Home Economics in cooperation with the Bureau of Markets and Crop Estimates of the United States Department of Agriculture, to show the food actually eaten in typical American homes. Included in this survey are 73 farm families from different parts of the country, representing many types of agriculture.

These studies bear out the general impression that on the average the farmers' families have an abundant diet, with enough different kinds of food to insure their obtaining all the substances necessary to keep them in health. In mere matter of bulk the farm families receive 19 pounds of food per day, in comparison with the average for all families, which eat only 14½ pounds.

What any family eats depends on what it has to choose from, what its members happen to like and dislike, and what it can afford. Local products were much more important before the days of quick transportation than at present. Differences in the tradition of the various nationalities that have settled in this country have caused local differences in diet. Much the same kinds of foods can be produced throughout the Middle Atlantic States, but the early "Pennsylvania Dutch" settlers tried to use American materials as they had used similar ones in Germany. Thus dishes typical of their sections came to be quite different from those of their neighbors from England or Holland.

These regional differences are descreasing to some extent because of the increased use of food products from other sections. Bananas from the West Indies.

(*Continued on page 16.*)

Lumber Cut in 1920 Probably Less Than in Previous Year

The 1920 lumber cut of the United States varied little from that of 1919, but incomplete returns indicate that it was slightly less, state officials of the Forest Service, United States Department of Agriculture. This opinion is based on reports received from 627 large mills, representing about one-half of the annual cut of the country, compared with reports from the same mills in 1919, as reported to the Bureau of the Census. The total reported cut of these mills was 16,709,115 M feet in 1920, as against 16,254,812 M feet during 1919—an increase of 3.4 per cent.

A heavy increase in cut is reported from Washington, Oregon, California, Idaho, and Montana. The New York cut also increased. But there are indications of a 10 per cent decrease in the cut of the Lake States, and also a general falling off in the production of southern pine, except in Georgia and South Carolina.

MARKETING ALFALFA PRESENTS SEVERAL DIFFICULT PROBLEMS

High Market Grade of Alfalfa Hay Produced by Southwestern Farmers.

Bleached Hay and Weeds Cause Loss by Lowering the Grade—Inspection at Market Centers not Uniform—Leaves Drop Badly When Baling Dry Hay.

The irrigated areas of the southwestern United States can produce a high market grade of alfalfa hay, but there are several difficult problems that must be solved in order profitably to market the hay, say specialists of the Bureau of Markets and Crop Estimates, United States Department of Agriculture.

Method of Baling.

The first step which has a direct bearing upon the marketing of alfalfa is baling. The rainfall in the Southwest is exceedingly light during the hay-making season, and for this reason much of the hay is baled out of the windrow or cock.

When hay is baled from the windrow in sufficiently green state to save all the leaves it can not be pressed tightly, because of the danger of heating, and shippers therefore frequently experience considerable difficulty in loading cars with the minimum weight for which they pay charges. Hay which has been stacked and allowed to dry can be baled more compactly, but in baling stack hay many of the leaves shatter because of the dryness. According to the application by many inspectors of the present grade rules, this hay is of a lower grade than when the leaves cling to the stems, notwithstanding the fact that the leaves may be contained in the bale.

Bleached Hay and Weeds Cause Trouble.

Bleached hay, together with weeds, causes considerable trouble in marketing alfalfa. It is well known that alfalfa hay bleaches quickly when exposed to bright sunlight, but there is a wide dif-

ference of opinion as to just the amount of nutrient that is lost in bleaching.

Commercial grade rules, however, are based in part upon this factor. Producers and shippers in these sections contend that too much weight is given the color factor in the present commercial grades for alfalfa and not sufficient weight to its feeding value.

From investigations recently made by the Bureau of Markets and Crops Estimates it appears that when the present grading rules are rigidly and technically applied, as is frequently the case on declining markets, it is impossible under the most ideal conditions to produce "choice" grade alfalfa.

The presence of a weed, a blade of grass, or of a bleached stem will prevent a bale from grading "choice," and it is practically impossible to obtain hay which is entirely clear of any of these things. Considerable hay is bought and sold on this grade, however, but the use of it, and sometimes also of the grade No. 1, causes the shipper a heavy loss.

The specialists believe that commercial grades for any kind of hay should be made so that physical limitations in production and preparation will be properly recognized, and that such grades should be uniformly applied, and not influenced whatever by the state of the market.

Causes of Wide Margins.

Most shippers in the irrigated sections seem willing to handle hay at a gross profit of $1 per ton if the chance of losses on account of rejections could be eliminated. The rejections are almost always based upon the claim that the hay is not up to grade, but occur almost entirely upon a declining market. With only the meager protection against this practice and resultant loss, furnished by inspection services maintained by the trade organizations of the various markets, he is compelled to increase his margin of gross profit to $2 or $3 per ton.

When the producer notes the wide difference between the price which he has received for his hay and the price quoted at the adjacent market, he feels that the shipper or dealer is taking advantage of him and is making too large a profit. The producer's desire to share in this supposedly large profit is one of the principal causes of the cooperative wave that is now agitating southwestern alfalfa growers. When this desire is stimulated by an enthusiastic, prospective manager it seems to be not a very difficult matter to form an organization of producers to ship and market hay.

Better Standards Way Out of Difficulty.

Cooperative market associations can no doubt market their own hay as advantageously as the individual shipper, provided their manager is as well trained and possesses equal experience and business ability, but they are sure to meet the same marketing difficulties, and will have just as many rejections and losses which must be deducted from the proceeds of their sales.

Many of the irrigated sections of the Southwest do not ship more than from 2,000 to 3,000 cars of hay each year and this business is in some instances divided between two or three shippers, who also conduct other businesses in connection, thus greatly reducing overhead expenses. Cooperative shipping associations are being organized in several of these projects. The cure for the present marketing difficulties in the alfalfa sections of the Southwest would seem to be along the line of better standards and their impartial applications, say the marketing specialists.

FLAX FIBER NEEDED FROM AMERICAN FARMS

The upside-down condition of things in Russia has produced many unlooked-for results, but none more unexpected to the casual mind than its effect upon the supply of flax fiber. Before the World War Russia produced about 80 per cent of the flax fiber used in making linens. This supply was cut off, while the demand for linens continues as strong as ever.

In the United States the normal consumption of flax fiber by the spinning mills, before the war, was about 10,000 tons a year, most of which was imported. To produce this amount of fiber about 60,000 acres is required. To help in meeting the situation the United States Department of Agriculture, through the Office of Fiber Investigations, is encouraging the production of flax fiber by experimenting with it in new localities, investigating new methods and machines, and developing improved strains of the fiber flax which are taller, yield more and better fiber, and some of which are resistant to disease and lodging.

It has been shown that better flax is produced from seed of selected strains than from imported seed, such as has been used in the past. Efforts are being made, too, to increase the seed of these selections for distribution generally.

A special survey is being made this season to determine the extent of disease injury to which flax is subject, and to procure definite information needful in devising methods for combating such diseases.

About 6,000 acres of fiber flax was grown in the United States in 1920, but the relatively low price for fiber has resulted in a greatly reduced acreage in 1921, estimated at 3,000 acres.

NEW FOREST EXPERIMENT STATION OPENED RECENTLY

Established at Asheville, N. C., in Southern Appalachian Region.

Object Will be to Secure the Information Needed by Foresters to Determine the Best Methods of Handling Forest Lands in the Southern Mountains.

A new forest experiment station, the first in the Eastern States, has been established at Asheville, N. C., by the Forest Service of the United States Department of Agriculture. Steady depletion of the Southern Appalachian timber supply has been responsible for the location of this station in the East, and the object of the work to be conducted will be to secure the information needed by foresters to determine the best methods of handling forest lands in the southern mountains.

Region Produces Fine Hardwood.

For many years the United States has depended for a large part of its hardwood timber products on North Carolina, Virginia, West Virginia, Kentucky, Tennessee, Alabama, Georgia, and South Carolina, states the Forest Service. The crest of hardwood production in this region, with a cut of approximately 4,000,000,000 feet, was reached in 1909. By 1918 the production had fallen off nearly 60 per cent, in the face of rising lumber prices and increasing demands. There is every reason to expect the same trend to continue, owing to the steady decrease in timber supplies. This involves one of our most important hardwood forest regions and many important dependent wood-using industries, including railroads.

The country as a whole will, in the future, have to depend on the steep mountain slopes of the Southern Appalachians for a very large percentage of its high-grade hardwood supplies. The bulk of the remaining hardwood stands is now in the Lower Mississippi Valley, and it is practically certain that a large part of this rich bottom land will be used for agricultural purposes, when the timber is removed. The entire country should therefore be directly interested in bringing about the growing of hardwood timber in this region, where ideal conditions exist for its production.

The general timber situation in the United States is exceedingly serious, foresters say. Something like three-fifths of our original timber stand has been destroyed or utilized, and an appreciable percentage of the remaining two-fifths

is made up of inferior second-growth. One-half of the timber we have left is in the three Pacific Coast States—Washington, Oregon, and California—while 90 per cent of our timber markets lie east of the Rockies, and a very large part of that 90 per cent east of the Mississippi River. Excessive prices for lumber, pulp paper, and practically all wood products have resulted from this situation.

The Appalachian forest experiment station will have to deal with the problems of a forest area approximately equal to twice that of prewar Germany. It will have to cover the problems of a large number of valuable species of trees, including 10 or more oaks, several hickories (which have, so far as is known, no foreign equivalents), yellow poplar, basswood, black walnut, cherry, specialty woods of high value, several valuable ashes, chestnut, and a number of other hardwoods. White pine and spruce and some southern pines are also well represented in this region.

Many Problems to be Studied.

Special problems under consideration are: The conversion of extensive cut-over, fire-damaged, and relatively unproductive forests into rapidly growing forests of the best species; methods for replacing the blighted chestnut forests; fire protection; the relation of grazing to forest growth and reproduction; methods of management which will produce the greatest protection to municipal watersheds; the greatest regulation of stream flow; the prevention of erosion. Studies in the quantity of timber of different species that can be successfully grown, and the development of methods for artificial reforestation will be part of the work. The whole technical basis for the practice of forestry for the region will be covered, in addition to the problems of National Forest administration. Success in reforestation, timber growing, and protection will depend largely upon the technical knowledge obtainable by means of the newly established forest experiment station.

GROWERS COOPERATE TO ADOPT FEDERAL TOMATO GRADES

The Federal Bureau of Markets and Crop Estimates, United States Department of Agriculture, and the New Jersey State Bureau of Markets are cooperating in a shipping point inspection demonstration upon Federal tomato grades. The local shippers and leading growers of Swedesboro, N. J., have expressed a desire for such service as they feel that definite grades properly enforced will go a long way toward increasing net returns.

Swedesboro is one of the leading tomato shipping points in the United States. The crop promises to be nearly as large as last year and of as good quality. It is estimated that Swedesboro growers will ship between 1,000 and 1,200 cars during the season. The movement has already commenced but heavy shipments are not expected until after the middle of July.

The Federal grades are U. S. No. 1, U. S. No. 2, and U. S. No. 3. The No. 1 grade includes tomatoes which are well shaped, uniform in color and free from such defects as cattaces, growth cracks, or injury from disease and insects. The No. 2 grade includes all stock which does not show leaking, while the No. 3 contains ungraded stock or tomatoes which can not be packed in either of the other grades. The marking requirements specify that either the minimum diameter or the numerical count be stated on the package in addition to net weight or volume now required under the provisions of existing legislation.

One Million Cords of Alaska Pulpwood Sold Manufacturers by Forest Service

One million cords of pulpwood on the Tongass National Forest, Alaska, has just been sold by the Forest Service of the United States Department of Agriculture to the Alaskan-American Paper Corporation. The timber is located along the east shore of the Behm Canal, Revillagigedo Island, about 32 miles from Ketchikan, the largest city in the Territory. The contract price of the timber was 60 cents per 100 cubic feet for spruce and cedar, and 30 cents per 100 cubic feet for all other species. The sale area covers 45,000 acres and extends for 55 miles along the coast. Twenty per cent of the forest is spruce, 66 per cent hemlock, and 14 per cent Alaska and western red cedar.

New Price Made Every Five Years.

A conditional award has been made by the Forest Service to the company, pending approval by the Federal Power Commission of their application for a hydroelectric power license. The timber sale contract covers an initial period of 32 years, or until 1953. The price of the stumpage will be redetermined and fixed by the Federal Government in 1928, and every five years thereafter. Cutting must begin by October 1, 1923, thus allowing two years for organization and construction of improvements. The contract also requires the establishment of a pulp mill of not less than 25 tons capacity by October 1, 1926. A yearly cut of from 2,500,000 to 3,000,000 cubic feet is contemplated.

The award of this sale is in line with the general policy of the Forest Service for making available the timber resources of Alaska as a means of increasing the supply of pulpwood for the United States. The national forests of the Territory probably contain 100,000,000 cords of timber suitable for the manufacture of newsprint and other grades of paper. Under scientific management, experts say that these forests can be made to produce 2,000,000 cords of pulpwood annually for all time, or enough to manufacture one-third of the pulp products now consumed in this country.

The Alaska forests also contain the second chief essential of the pulp and paper manufacturing industry, namely, water power. No accurate survey of the power resources has yet been made, but known projects have a possible development of over 100,000 horsepower, and it is believed that a complete exploration of the national forests in southern Alaska will show not less than 250,000 potential horsepower that can be developed from water.

Forest Service cruisers are now working in Alaska collecting data for further use and development of the forests. One block of timber containing 335,000,000 cubic feet—enough to keep a 100-ton pulp mill running—has been advertised and is now ready for sale.

NEW BREED OF POULTRY DEVELOPED BY UNCLE SAM

Lamona is the name given to a new breed of poultry that has been developed at the Experimental Farm of the United States Department of Agriculture at Beltsville, Md. It has been named by Secretary Wallace after the originator, Harry M. Lamon, senior poultryman of the Bureau of Animal Industry. It is a white fowl with red ear lobes that lays a white-shelled egg. White Plymouth Rock, Silver Gray Dorking, and White Leghorn were the breeds used as foundation stock.

The fowls are larger than Leghorns, with long, deep bodies, well feathered, and comb and wattles of medium size. The new breed is not ready for introduction and neither eggs or fowls can be secured. When a sufficient stock of birds has been raised specimens will be sent to State agricultural colleges and experiment stations to test their adaptability to different sections and conditions.

Many Plants Tested for Making Silage—Cows Relish Some but Refuse Others

A series of experimental feeding tests conducted by the United States Department of Agriculture at its Beltsville, Md., live-stock farm, revealed some interesting information as to the effect of siloing upon the palatability of various plants found on a farm or range.

Use Barrels for Small Silos.

During the last summer and fall about 150 different plants and combinations of plants were packed in barrels in the same manner that ensilage is placed in a silo. The purpose was to study the effect of the silo fermentation upon the fiber, and other features of the plants. It was thought possible that silage would overcome some objectionable qualities of certain plants, in addition to breaking down the fiber of some which were too woody for stock feed.

The various lots of silages were taken to Beltsville to test their palatability as cattle feed. The tests were not protracted enough to give final conclusions, but a number of interesting results were obtained. Both wild and tame sunflowers were eaten readily when they came out of the silo, although the peculiar flavor and woody stalk of the former make it distasteful in its natural state. Russian thistle was eaten in the course of about 12 hours, and the same was true of ragweed, which cattle seldom touch in the field. Canada thistles, and castor bean plants without seed were eaten quite readily. Jack bean vines and pods were eaten rather reluctantly. The cows ate siloed Australian salt bush, but not the native plant. Siloed onion tops were fed to four cows; two ate them and two refused them. Buckwheat also provided a choice morsel. Cabbages, which in their natural state are eaten avidly by cattle, were absolutely untouched when siloed, the product being in many respects similar to sauerkraut but without the salt. Giant rye grass went untouched. The cattle were not compelled to eat any of the siloed products to satisfy hunger, as hay was fed them between siloed rations and they had the regular portions of grain. The tests were not entirely conclusive, especially as the quantities were so small that the animals did not have an opportunity to get accustomed to unfamiliar flavors.

Tests May Be Continued.

The department may make more extensive tests another season on some of the materials, as there was no opportunity with barrel lots to gain any knowledge as to the beef and milk producing value of the feeds.

STRAIGHTHEAD, A DESTRUCTIVE DISEASE OF IRRIGATED RICE

Straighthead is one of the most destructive diseases of irrigated rice in the southern part of the United States. Rice heads or panicles which are so nearly sterile that they remain erect when mature rather than droop normally are commonly referred to as straightheads. There are several types of sterility, but the disease known as straighthead is by far the most destructive and has been credited with a loss of from 12 to 20 per cent of the annual crop in the principal rice-growing States—Texas, Arkansas, and Louisiana. Within this section the damage generally is localized, owing to the fact that the disease is more prevalent on land on which nonirrigated crops have been grown for a number of years and on virgin soil than on land previously sown to rice.

Important new information as to the cause and control of straighthead in rice is contained in Farmers' Bulletin 1212, Straighthead of Rice and its Control, just issued by the United States Department of Agriculture. The investigations upon which it is based were made by department pathologists in cooperation with the Louisiana Agricultural Experiment Station.

They show that straighthead can be controlled if the grower irrigates about 10 days after the plants emerge, and then in case symptoms of the disease are seen drains the land six weeks after irrigation and leaves it dry from two to three weeks. When the plants begin to turn yellow and show signs of withering, growers are advised to apply water and retain it for the remainder of the season.

NO ONE TYPE OF ROAD BEST; TRAFFIC NEEDS DIFFER MUCH

No effort has been made to encourage the construction of any particular type of road in the Federal-aid projects administered by the Bureau of Roads of the United States Department of Agriculture. The legal requirement that the roads shall be "substantial in character" has not been interpreted to mean that only the most expensive types of roads should be built. It has been recognized that the heavy and expensive construction which is necessary in New York, Massachusetts, and Pennsylvania is not suitable or warranted for the less exacting traffic of Nevada, Idaho, and the Dakotas.

There is a suitable type of road for every type of traffic. Granite blocks are best around wharves and freight depots; country thoroughfares need to be better than rural side roads, lightly traveled. A number of other considerations have influenced the choice of type in many cases. It is frequently found that suitable local materials may cost less than better materials imported from a distance; approval of the use of local materials is not infrequently given for the purpose of encouraging local production. In parts of the far West the entire absence of water along a right of way, and the expense of keeping an adequate supply, often make it necessary to approve the building of a type of construction that can be built without using large quantities of water.

The initial decision as to the type of a particular road is made by the State highway department. The Bureau of Public Roads makes an independent study of the conditions. The most suitable type of road in the judgment of the engineers of the State department and of the Bureau of Public Roads is finally decided upon. The earth, sand-clay and gravel roads which make up 66 per cent of the mileage have cost only about one-fourth of the Federal-aid funds used, while the higher types, including cement concrete, brick, and bituminous concrete have called for 60 per cent of the money to build 24 per cent of the mileage.

CLEAR WOOL BRINGS BEST RETURNS.

That clear wool is worth more than burry wool was conclusively demonstrated in connection with the recent cooperative sale of some 91 sacks of wool by farmers in Humphreys County, Tenn., say marketing specialists of the Bureau of Markets and Crop Estimates, United States Department of Agriculture. The wool was separated into six lots according to freedom from burs. The lot with the fewest burs brought 19½ cents a pound at shipping point and the lot with the most burs 9 cents.

A marketing specialist of the Tennessee Agricultural College assisted by the county agricultural agent separated the wool in the presence of the farmers. The producers gained much information about different types of wool, approved methods of preparing the product for market and current market demands. The wool was sold to a Tennessee blanket manufacturer.

States to Receive Federal Aid for Protection of Forest Lands from Fire

Twenty-four States or more will receive $400,000 of Federal funds for the protection of their forest lands from fires during the fiscal year beginning July 1, according to statement by the Forest Service of the United States Department of Agriculture. This cooperation was first authorized by the act of March 1, 1911, commonly known as the Weeks law, and has continued ever since. Last year $125,000 was appropriated for the work, but Congress this year, realizing the importance of fire prevention in our forests, substantially increased the amount to be expended. At least three more States are expected to join the ranks of cooperators shortly.

Must Protect All Forest Lands.

Allotments of money for forest protection are made by the Forest Service to individual States on the basis of 7 per cent of the estimated cost of adequate fire protection in that particular State, with the limitation that the maximum allotment can not exceed $25,000. Both figures depend upon, and vary with, the size of the Federal appropriation for this work received from year to year. Forestry experts believe that the ideal apportionment of protection expense would be: Federal Government 25 per cent, States 25 per cent, private owners 50 per cent, but this is not possible at present.

The four important limitations governing Federal cooperation in fire protection under the Weeks law are:

1. It is extended only to States that have provided by law for a comprehensive system of fire protection.

2. It is limited to the watersheds of navigable streams.

3. The State must expend an amount at least equal to the Federal appropriations for that State.

4. Fire protection must include not only merchantable timber, but also young growth and cut-over lands; in other words, it must cover all classes of forest land.

The basis of this Federal cooperation is the recognition by the Government of the Nation's interest in keeping the forest lands of our country continuously productive, especially on the watersheds of navigable streams, and the further recognition of the fact that the Nation should bear a part of cost of the work. With fire danger minimized or eliminated, foresters say the problem of keeping forest lands continuously producing timber, and erosion and floods partly controlled will be greatly simplified, and it is to help the States and private owners to do this very thing that the cooperation under the Weeks law is carried on. The following table shows the estimated area of forest land requiring protection and the amount of Federal funds that will be available to States with which a cooperative agreement now exists, providing they qualify under the limitations set forth. A part of the appropriation is held back for use in extending cooperation to States that may later qualify and ask for it.

Area of Land Requiring Protection.

State.	Areaneeding protection.	Allotment.
	Acres.	
Maine	14,000,000	$22,050
New Hampshire	4,000,000	6,300
Vermont	3,000,000	3,150
Massachusetts	3,000,000	7,350
Rhode Island	250,000	625
Connecticut	1,500,000	3,150
New York	14,000,000	22,050
New Jersey	1,800,000	5,050
Pennsylvania	12,000,000	25,000
Maryland	2,000,000	2,800
West Virginia	5,000,000	7,000
Virginia	13,000,000	18,200
North Carolina	18,000,000	25,000
Louisiana	12,000,000	12,600
Texas	10,000,000	10,500
Michigan	15,000,000	25,000
Wisconsin	14,000,000	25,000
Minnesota	20,000,000	25,000
South Dakota	50,000	100
Montana	4,900,000	13,700
Idaho	4,500,000	19,950
Washington	10,000,000	21,000
Oregon	12,000,000	25,000
California	13,000,000	22,750
	207,000,000	348,325

SCHOOL CHILDREN DISPLAY SKILL IN POSTER DESIGNING

"Milk, the life saver," which showed a milk-bottle lighthouse, with a coffee-pot floating on the angry waves and nearly ready to sink, was the title of a well-drawn poster submitted by a fifth-grade child in the poster contest held during the Madison, Wis., milk campaign. A poster which won the sixth-grade prize showed a baby lying in a hammock slung between two milk-bottle supports marked "His foundation for the future." A football hero in his fighting clothes, with "Sis-boom-ah, he drinks milk," was a close second in this class.

In the seventh-grade competition the prize was won with another football hero wearing the cardinal, which is the color of Wisconsin University, and booting the ball over the goal. A milk bottle, also in football togs, follows him, the title being appropriately, "On, Wisconsin." In the eighth-grade a poster entitled "Nature's Best," a very realistic reproduction of a dairy cow, won the prize. Uncle Sam viewing a billboard which showed in large letters, "Use more milk," was a close second.

The imagination and wealth of ideas possessed by our American school boys and girls have been brought out very strikingly in the milk-poster contests held in the schools of various cities and towns throughout the United States, says a milk specialist from the Dairy Division, United States Department of Agriculture.

In the school-poster contests which were held in connection with the 40 or more milk campaigns in which the Dairy Division has cooperated many clever designs were worked out, and it seemed after each contest that all the available ideas on the food value of milk must surely have been exhausted. In each contest, however, the children brought in a surprising number of new and clever ideas, as shown by the contest mentioned above.

"The milk-utilization work in the schools, of which the poster contest is a part, and which includes milk talks and essay contests, has proved a very effective means of increasing the use of milk," says the department specialist, "and is now considered one of the most important features of the milk campaign."

LUMBER VALUE OF PINE TREES NOT HURT BY TURPENTINING

The operation of turpentining pine trees does not lower the strength of the wood, according to information obtained by the Forest Products Laboratory of the Forest Service, United States Department of Agriculture. The crude turpentine, or oleoresin, is not drained from a reservoir in the tree, but is produced by the living cells in the sap wood at or near the spot where the cut is made on the trunk. No turpentine is produced by the heartwood because all of its cells are dead. The heartwood may be saturated in places with pitch, but this does not readily flow out as does the resin freshly formed in the sapwood. The major part of the tree is not affected in any way, and the loss due to death of trees or to a reduction or degrading of lumber is very small when the proper method of turpentining is followed; this loss is more than offset by the additional revenue obtained through turpentining. The greater part of the wood that is chipped away would not have become finished lumber, but would have gone into slabs and edgings at the sawmill. With proper treatment the turpentined faces remain healthy, and the wood underneath does not become saturated with resin to any great extent.

Corn Ear Worm Becomes an Important Enemy of Vetch in the Southern States

The corn ear worm, also known in the Cotton Belt as the cotton bollworm, one of the most omnivorous and destructive eaters among all insect pests, has been found a serious enemy of vetch when the crop is raised for seed in the South, according to specialists in the United States Department of Agriculture. The pest and control measures are described in a new Farmers' Bulletin 1206, Corn Ear Worm as an Enemy of Vetch, which may be had on application.

Attacks Corn, Cotton, and Truck Crops.

The corn ear worm occurs throughout the United States. In the North it injures mainly green corn in the field and garden, and in the South, corn and cotton, especially in the western portions of the Cotton Belt. Tomatoes and other truck crops also suffer severe injury. Damage done by the corn ear worm to cultivated crops, excluding alfalfa, has been estimated at $27,000,000 a year.

The corn ear worm is practically omnivorous. Besides feeding on vetch, corn, cotton, tobacco, alfalfa, and tomatoes, it eats various food plants, including beans, pumpkins, peanuts, squash, cowpeas, peppers, asparagus, and sunflowers. Deprived of other food, the caterpillars devour one another.

A large part, at least, of the danger from the ear worm on vetch lies in the fact that it may pass from this crop to other crops, such as corn or cotton. The injury to the vetch, as hay, is not considerable, the chief injury being to the seed crops. Cool, moist weather favors an outbreak of the corn ear worm on vetch and keeps back some of its insect enemies. The adult of the corn ear worm is a moth or miller varying in color from dull olive-green in the male to reddish-brown in the female. It may be seen flying about just before dusk. It lays light-yellow eggs in clusters, sometimes depositing as many as 300 during an evening. The caterpillar hatches in from three to eight days, according to the season, and from three to four broods appear in a single year. It is the caterpillar which causes all the damage.

The caterpillar is a repulsive worm, well known to all eastern farmers. When newly hatched it is pale yellowish-white with black head. It walks with a looping motion somewhat similar to that of a measuring worm. Its body is covered with numerous wart-like humps of a dark color, each bearing a short hair. These humps give the caterpillar a spotted appearance. When full grown it is about 1½ inches long. The full-grown caterpillars vary greatly in color from pale green to very dark brown. They feed from 22 to 28 days, doing immense damage. Afterwards they burrow into the ground and form dark-brown, shining cases from which they emerge as moths.

Artificial Control Measures Necessary.

There are various insects and birds which prey upon the worm, and toads also consume large numbers, but artificial control measures are necessary, the more so as in many cases during recent invasions the infestations have started in hairy vetch and spread to young corn, cotton, and alfalfa.

The seed crop of vetch should be examined carefully from time to time, and if the caterpillars are found abundant the crop should be cut for hay, or insecticides applied. Full directions can be found in this bulletin and in Farmers' Bulletin 908, Information for Fruit Growers About Insecticides, Spraying Apparatus, and Important Insect Pests.

CALIFORNIA'S HIGHWAY SYSTEM STUDIED BY FEDERAL BUREAU

Eighty-seven and one-half per cent, or 1,262 miles, of California's highways paved with concrete has been found to be in good or better than good condition by the Bureau of Public Roads of the United States Department of Agriculture. Some months ago an adverse report was made by two of the large California automobile clubs regarding the condition of California's highway system. Recently the Bureau of Public Roads has completed, on request, an impartial and thorough investigation of California's highway system. The Federal bureau reports that only 12.5 per cent of California's highway concrete is inferior.

California's concrete pavement is practically all 4 inches thick. The use of this thin slab, which came in for so much condemnation in the first report, made it possible to give a large part of the State good highway service at a reasonable cost. The design was determined nearly 10 years before the heavy traffic came, so that, measured by results, the California commission's work appears to have been a success. Seventy per cent of the defective pavement occurs on clay and adobe soils, but a large mileage of the same thin pavement on these adverse soils still remains in good condition.

The bureau found the 4-inch slab inadequate (the commission itself has abandoned it in favor of a 5-inch reinforced concrete design) and advises that experimental sections be made on the unfavorable soils. It also finds that the ¾-inch carpet coat, famous in California, does not give a service commensurate with its cost.

Of interest in all parts of the country is the bureau's finding that there is nothing presented by the entire California study which indicates that concrete is not a successful pavement. Simple, satisfactory methods for classifying the conditions of concrete roads have been developed from this study which will be found invaluable in classifying roads in other States.

FIRST JUNIOR AGRICULTURAL WIRELESS CLUB ORGANIZED

Word has just been received by the agriculturist in charge of boys and girls' club work for the United States Department of Agriculture that the first junior agricultural wireless club in the United States has been organized by the club agent for Ocean County, N. J. Forty enterprising farm boys and girls of this county are constructing wireless outfits for the purpose of receiving wireless market news from the Bureau of Markets, and posting the news for the benefit of the farmers of the county. A number of outfits are already in operation and the farm market quotations are posted daily in the local post offices, stores, and other central places.

Older club members who are expert in wireless operation are instructing the younger members in the art of wireless telegraphy and through this method of disseminating market information, Uncle Sam is developing a crop of efficient wireless operators who may be depended upon to assist their country in any emergency.

INSPECTORS WATCH DISEASED PRODUCTS

To detect local outbreaks of diseases of vegetables and fruits, which when uncontrolled cause heavy losses in the field or in transit, food products inspectors of the United States Department of Agriculture are reporting diseases found in shipments of produce at 23 of the leading market centers of the country. If a shipment shows a serious disease or rot, the county agent and other representatives in the locality affected are notified at once and instructions given for forestalling or minimizing future losses. The notification to the point of shipment also enables shippers to discontinue shipping material that is certain to spoil in transit.

Pasteurization Keeps Fruit Juice Sweet Under Method Advised by Department

Sweet cider or grape juice can be preserved in a sweet condition indefinitely by the directions furnished by specialists in the Bureau of Plant Industry, United States Department of Agriculture.

As rapidly as the juices are pressed from the fruit place them in clean vessels. Wooden barrels or tubs which have previously been thoroughly scalded will serve the purpose very well, although earthenware jars, if available, should be used. These are allowed to stand over night, or for not more than 12 to 14 hours, in the coolest location possible so that much of the solid matter suspended in the juice will settle to the bottom. Glass jars or bottles must be thoroughly sterilized to receive the juices, which are drained off without disturbing the sediment.

May Use Glass Fruit Jars or Bottles.

If fruit jars are used they should be fitted with sterilized caps and rubbers, and the cap tightened down as far as it can be turned. If bottles using crown caps are used, the bottles are capped as they are filled, using caps which have been sterilized. In case bottles closed with corks are used, set the previously sterilized corks in place in the bottles and tie them down loosely with strong cord so that steam may escape. To relieve the pressure during sterilization the bottles should be filled only to the neck.

A wash boiler or other convenient vessel can be prepared for a "water bath" by fitting it with a wooden rack on which the containers, filled with juice as above indicated, are placed. The bath is filled with cold water and the bottles or jars, if closed, are inverted or laid on one side so as to wet the inside of the caps thoroughly with juice. If bottles closed with corks are used, the bottles must stand upright in the water, which should come up to the necks of the bottles.

The heating is then started. A thermometer is hung so that it will dip for half its length into the water, which is heated gradually until its temperature reaches 175° F. Allow the bottles or jars to remain in the water for 30 minutes if quart or half-gallon jars are used, and from 40 to 45 minutes if gallon bottles are used. Then remove from the stove and immediately tighten down the caps of the jars, if jars are used. If corked bottles are used, drive the corks firmly into the necks; invert each bottle so as to wet the cork thoroughly with the hot juice; then complete the sealing by cutting the cork off smoothly and pouring hot paraffin over it.

Place the product in a dark, cool storage room. Watch it for a period of a week or more for the beginning of fermentation, which will be indicated by frothing at the surface of the liquid. If any bottles show signs of fermenting, return them to the wash boiler and repeat the process exactly as before, loosening the tops, of course, before heating begins, and closing down firmly again before the liquid is allowed to cool.

When the juice is placed in storage the suspended solid matter will gradually settle out and sediment will accumulate in the bottom and on the sides of the jars. In the course of two or three months at ordinary temperatures, this settling will be completed and the liquid will be fairly clear. It may be used directly from the bottles or drawn off into clean bottles, which should be sterilized before they are filled and which should then be corked and pasteurized by heating to 170° F. for the same length of time as in the first pasteurization. If rebottling is necessary or desirable the second heating should never reach the temperature to which the juice was first heated, otherwise the clarification which is secured by settling and decanting into new containers will be defeated, as a second process of sedimentation will occur. If the temperature be kept 5° below that reached at the first heating, this result will be avoided.

Observe Correct Temperature.

A reliable thermometer is a necessity for this work, as it is important that the juice be heated to 175° F. in the first heating, in order to destroy the organisms which would otherwise cause fermentation. It is equally important that the juice should not be overheated, as this will give it a cooked taste, which is decidedly unpleasant to many people.

JELLY FAILURE MADE SUCCESS BY USE OF PECTIN

Jelly which will not "jell" may sometimes be reclaimed by the use of pectin. A quart of grape-juice which had refused to become jelly was recently brought into the experimental kitchen of the Home Economics Office, United States Department of Agriculture. By the addition of a small amount of apple pectin a firm, fine-flavored grape jelly was obtained. Because of this success a whole shelf full of jelly failures, from which the sample was taken, can now be redeemed.

Many fruits, such as most berries and certain grapes, peaches, and pears, contain a comparatively small amount of pectin, unless taken at exactly the right stage of ripening; that is, before they are fully ripe and ready for eating; or in some cases they may be deficient in pectin even when unripe. In such cases the result of adding the proportion of sugar ordinarily used in jelly making and of cooking by customary methods is a heavy fruit sirup rather than a jelly.

Pectin may be easily extracted from apples, also from the citrus fruits, and kept ready for use with juices that lack this ingredient.

NEVADA CLEAN-UP CAMPAIGN BETTERS RURAL SANITATION

Sanitation has an important place on the program of work for 1921 in six communities in Clark and Lincoln Counties, Nev., reports the State leader of home demonstration agents, working cooperatively with the United States Department of Agriculture and the State agricultural college. Securing and enforcing definite rules in regard to clean yards, lots or houses, spring water, ditches, and streets is one of the principal goals.

Four of these communities have no town organization, the county government regulating local affairs. Under the direction of home demonstration workers the women are taking steps to form town organizations in order to have authority to make and enforce ordinances for health, and to make local improvements of various kinds. As there is no sewage system in these communities, the water is very unwholesome and a menace to health. It is brought long distances from springs through unclean, open ditches.

The people of Mesquite community in Clark County held their second clean-up day last spring. As a result 3 miles of ditch were cleaned, three culverts made, the main channel of the town ditch changed, a new head-gate built, weeds grubbed out, rubbish cleaned up, and mud holes filled and leveled. A number of girls of the community agreed to take turns pouring kerosene on all ponds to kill mosquito eggs and wrigglers, thus helping to rid the community of one nuisance. Each person worked in his own neighborhood and had his dinner at home. More was accomplished than if a community dinner had been served.

Weekly News Letter

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The WEEKLY NEWS LETTER is the official publication of the Department of Agriculture. Its purpose is to report the results of research and investigation in the department. It is intended for department workers and for official cooperators, to whom it is sent free, and as a news service to the press. The limited funds available for publishing the NEWS LETTER make it impossible to extend its free distribution beyond these groups. Others can obtain it from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the rate of 50 cents a year. Stamps can not be accepted in payment.

The News Letter is a news service, and editors are invited to reprint from it with or without credit.

LIVINGSTON NOT DISCHARGED AS HEAD OF MARKETS BUREAU

Referring to stories which have appeared in several newspapers to the effect that George Livingston, formerly Chief of the Bureau of Markets of the Department of Agriculture, was discharged because of antagonism to the administration reorganization program, Secretary of Agriculture Wallace said:

"There is no foundation for the statements which have been made concerning Mr. Livingston. His resignation was purely voluntary; it was not asked for. These stories do Mr. Livingston a gross injustice. In accepting Mr. Livingston's resignation I expressed the hope that he could so arrange his affairs as to remain with us for a time at least as a consulting specialist in marketing.

"For some time it has been known by Mr. Livingston's friends in the department that he had under consideration a number of attractive offers from business concerns. The reason for his decision to sever his connection with the department July 1 is stated in his letter of resignation as follows: 'As you know, I have been planning to leave the Government service, and I feel that in the interest of both the department and myself I should tender my resignation as Chief of the Bureau of Markets at the close of business on June 30, 1921. I am sure that the work of the bureau will be served best by permitting the filling of the vacancy at the beginning of the new fiscal year on July 1.'

"Mr. Livingston made it plain that he selected July 1 as the time for leaving the department because on that date the Bureau of Markets and the Bureau of Crop Estimates were to be consolidated, and he felt that inasmuch as he probably would be giving up Government work before a great while it would be in the interests of his bureau and of the department that the appointment of the new chief be made at the beginning of the fiscal year."

REORGANIZE TO STRENGTHEN COOPERATIVE MARKETING WORK

To strengthen its service in the field of cooperative marketing, the Bureau of Markets and Crop Estimates of the United States Department of Agriculture has undertaken a reorganization in this branch of its work. Mr. Lloyd S. Tenny, assistant to the chief of the bureau, has been designated to take charge of the cooperative marketing activities of the bureau and to arrange with the several commodity divisions for the employment of commodity specialists who are qualified in cooperative marketing.

This work is so intimately connected with the marketing work in general of the several commodity divisions that it seemed desirable to coordinate the two lines of work more closely. A study of the economics of cooperative marketing is planned and a more thorough analysis will be made of the extent of existing cooperative organizations, including the size of the business, the organization, machinery, sales, brokerage, etc. Farmers desiring information and advice in the organization and conduct of cooperative associations will be aided by service and extension men experienced in cooperative marketing.

COMMUNITY ROAD BUILDING SAVES A FOUR-MILE HAUL

Because of 100 yards of flooded, swampy area, farmers in Autauga County, Ala., were obliged for several years to make a detour of 4 miles to reach the market, the town, the corn mill, sirup mill, gin house, church, or school. There had been a road in use for many years which led across a creek at the heart of a marshy district by means of a bridge. This road was long neglected through lack of community cooperation, and in the winter floods of 1919 the bridge was washed away so that the road became entirely impassable.

The county agent from the United States Department of Agriculture and the State agricultural college felt that some action should be taken, and offered to conduct a road-building demonstration last spring if the farmers in the district would contribute materials and labor. The response was gratifying. Nineteen men and five teams were furnished, and in 2½ days the road and bridge were completed. Everything needed was on hand in the community so that no time was lost going to the mill for anything, the only expense being $1.20 invested in nails. The road was constructed with both gravel and corduroy.

The demonstration was one of the most successful ever carried out in the county. Nothing could have met with more general approval and satisfaction. One farmer who makes two trips to market a week said he would save over $10 on every trip over the new road because of the shorter haul. About 500 people will be benefited by the improvement.

CROP DAMAGE IN TEXAS BY HURRICANE AND RAIN

Damage to the cotton crop by the tropical storm that entered Texas June 22 may consist chiefly in the effects of the excessive rainfall, which possibly will so delay cultivation that grass, growing among the cotton plants, will affect their growth and development. This is the report of the Texas cotton statistician of the Bureau of Markets and Crop Estimates, United States Department of Agriculture, who also states that this effect, if it eventuates, will be found in a strip about 100 miles wide across the center of the cotton-growing area from the Gulf to Oklahoma. Some counties report loss from flood on bottom lands, but this, together with loss from wind, is inconsequential for the State as a whole. The bureau's agricultural statistician for Texas reports that damage to corn, melons, and truck crops in general on account of wind extends 150 miles from the Gulf and seems to be considerable in some areas in three or four of the lower counties. In the northern part of the State the rainfall was beneficial.

CUTWORMS DESTROY GRAIN IN MONTANA AND COLORADO

The pale western cutworm is again present in destructive numbers in Montana and Colorado, according to reports to the Bureau of Entomology, United States Department of Agriculture. In Montana it is estimated that from 10 to 75 per cent of the small grain will be destroyed in the counties infested, and in Colorado thousands of acres are being plowed out and reseeded to a catch crop.

Tuberculosis Causes Heavy Loss to Poultry Keepers by Frequent Deaths

Tuberculosis of fowls is more widely distributed over the United States than is generally supposed. It is especially destructive to flocks in the North and West. The course of the disease is slow, symptoms are apparent only in the late stages, and the mortality is high. The danger to man, however, is slight, especially since cooking the flesh of fowls destroys the tubercle bacilli. Treatment of fowls affected is declared to be useless, but the disease may be stamped out by methods described in Farmers' Bulletin 1200, which may be had upon application to the Division of Publications, United States Department of Agriculture.

Found Widespread in Some States.

Of all domesticated birds the fowl shows by far the highest mortality from tuberculosis. The disease has spread so extensively in some States as to cause very serious losses to the poultry industry. The insidious manner of attack makes it most difficult to combat, because affected birds show no visible symptoms until the disease processes are far advanced, and in the meantime it has been communicated to others of the flock.

Avian tuberculosis, as it is sometimes called, is caused by a microorganism closely resembling the bacilli of human and bovine tuberculosis. While, primarily, it affects birds, it may also attack other animals. Pigs exposed to tuberculous flocks frequently are affected, and display localized tubercles in the lymph glands of the head, neck, and mesentery. Rats and mice also may contract the disease naturally. Bacilli of the avian type have been found in tuberculous persons. The principal danger to humans is in eating raw eggs from tuberculous fowls, as eggs may be infected with the bacilli; however, as man is considered quite resistant to the avian type of tubercle bacilli, the chances of infection are doubtless slight.

Tuberculosis may be introduced on a farm in several ways, such as receiving infected fowls, exposure to neighboring infected flocks using same range, infection of premises by free-flying birds, carriers, such as man or animals, whose shoes or feet may carry infected droppings from near-by infected farms. Most eggs harboring the organism fail to hatch, thereby reducing to a minimum the danger of infection from this source, but if infected eggs are thrown to the chickens the disease may be established in the flock.

Although birds may become infected at any age, the disease is not readily detected by ordinary observation in those under 1 year old, because months are required for the bacilli to multiply in the system sufficiently to interfere with the normal functioning of the body. The older fowls, from 2 to 3 years old, are most likely to display symptoms and show a high death rate.

Early Symptoms Not Easily Seen.

One of the first symptoms is gradual emaciation, which becomes especially noticeable in the breast muscles. These diminish in size until in advanced stages there is scarcely any flesh left on the breast bone. Feeling the breast region will readily detect this wasting. The appetite continues good. Lameness in one or both legs, or drooping of one or both wings is another symptom.

The bulletin mentioned describes these and other symptoms at length. Paleness of comb, wattles, skin on the head and about the eyes is evidence of the last stages. A skilled operator can apply the intradermic tuberculin test to detect the presence of the disease, but medical treatment for fowls is futile. Preventive measures, the most usual being slaughtering, are the wisest. Fowls in good flesh may be used for food if they show no lesions or only slight ones. Those fowls that are badly diseased and all visceral organs should be burned. The premises should be disinfected thoroughly, including all drinking, eating, and other utensils.

MARKET SERVICE SAVES MONEY FOR MELON GROWERS

Melon growers and shippers in the Imperial Valley of California have periodically experienced great difficulty in marketing their crop, which is highly perishable and must be distributed with efficiency if financial disaster is to be avoided. In some years production has overrun distribution, and this problem led the United States Department of Agriculture to assign representatives to the locality in order to assist shippers in distributing the crop efficiently during the rush season. As a further aid, the Bureau of Markets of the department gave market reports on cantaloupes in its news service. It is estimated that during the first year of the bureau's service the producers and shippers were saved $1,000,000. With regard to this service, one firm wrote the Bureau of Markets as follows:

"Permit me to express this company's gratitude and sincere appreciation of the vast benefits derived through the assistance of your office. * * * We feel that this season's operations have proved that the cantaloupe industry of the Imperial Valley * * * can be operated on a practically safe basis, profitable to growers, by a systematic publication of daily information and through such assistance as has been afforded by your office."

Another wrote: "No other system could have saved a disaster here this year." And yet another, "The cooperation of the Government along this line is absolutely necessary for the salvation of this industry. * * * The outcome of this season * * * would have been ruinous for all concerned had your office not come to our rescue."

WILL ESTABLISH TENTATIVE GRADES FOR TOBACCO

An agreement to investigate the grading and marketing of tobacco in the State of Pennsylvania and adjoining States for the purpose of establishing tentative grades for the principal types of tobacco grown in Pennsylvania has been entered into between the Bureau of Markets and Crop Estimates, United States Department of Agriculture, and the Bureau of Markets of the Pennsylvania Department of Agriculture.

The investigation will be conducted to bring about a proper correlation between the Pennsylvania grades and the tentative grades that may be formulated in other States, so that a single system of comparable market grades for all the principal types of American-grown tobacco may be effected. The United States Department of Agriculture will pay the salary of the specialist in charge of the work; the expenses of the investigation will be borne by the Pennsylvania Bureau of Markets.

SOY BEANS MAKE HAY OF SUPERIOR QUALITY

The soy bean when cut at the right stage of growth and properly cured makes an excellent hay of high feeding value that is greatly relished by all farm animals. As compared with hay from other leguminous crops, soy-bean hay is equal or superior to any. The use of this hay as a source of protein, which can be produced on the farm to balance feeds for growing stock or for milk, should reduce the quantity of high-priced concentrated feeds which it is necessary to purchase.

May Import Insect Enemy to Destroy Satin Moth, a Newly Discovered Pest

Introduction of insects from Europe—parasite enemies—may be necessary to aid in combating the satin moth, a newly discovered foreign pest that is causing much destruction among the poplar and willow trees over a large area around Boston, Mass. Two of its enemies, insects already introduced into this country to aid in fighting the destructive gipsy moth, are found to be doing valiant service against the new pest, and the prospect of controlling it by parasites is encouraging, say entomologists of the United States Department of Agriculture. It may be necessary, however, to bring in from Europe some of its enemies that do not exist here at the present.

Attacks Poplar and Willow Trees.

In Department Circular 167, The Satin Moth: An Introduced Enemy of Poplars and Willows, the department gives a review of Government and State work against the pest since its discovery in this country July 1, 1920, and describes the habits and life of the insect in its various stages. Time has not permitted experiments to find the most effective remedies. The larvæ were so nearly full grown at the time they were first found that spraying did not prove effectual. From their present knowledge of the insect, entomologists advised the following treatment for the season of 1921:

Spray poplars and willows as soon as they are in full leaf with arsenate of lead at the rate of 10 pounds to 100 gallons of water, using soft soap for a "sticker." If the infestation is severe, it may be necessary to repeat the operation in June. If egg clusters are abundant on the trees in July, spray again with the same material about August 1.

If these suggestions are followed and the amount of spraying is governed by the density of infestation, satisfactory results should be secured, it is said.

To predict the ultimate importance of a newly introduced insect is rather hazardous, say the entomologists. If the feeding is confined to the poplars and willows, the damage will be greatly restricted. While these trees are not considered of prime economic importance, there are certain areas where they grow satisfactorily that will not support more useful species. Then, also, there is the osier, or basket willow, which in some sections is of considerable economic importance. Another season, it is thought, will doubtless give the necessary opportunity to determine the destructive possibilities of the insect.

Found in Massachusetts and New Hampshire.

Although the original source of the infestation can not be determined, it is thought probable that the insect was brought into this country during the dormant season in crevices of bark on live or dead trees. It is likely that the insect has been in this country several years and has only became abundant enough to spread very rapidly during the last two or three years. It is now known to occur over an area of 642 square miles, including 60 townships in Massachusetts and 4 in New Hampshire.

COUNTY IN NORTH CAROLINA BENEFITED BY CLUB WORK

The beautification of the farm home itself; and of its surroundings, is the latest step in a consistently graduated plan among club workers in the Southern States. The realization that a widely extended effort was necessary to obtain satisfactory results made home and school improvement the object of a campaign conducted in April in Iredell County, N. C., under the direction of the home demonstration agent of the United States Department of Agriculture and the State agricultural college. Hundreds of men, women, and children throughout the county entered into the plan with zest. Numerous prizes were offered by business firms to stimulate interest. Snapshots were taken of schoolhouses, front and back yards, dining rooms, living rooms, bedrooms, "before" and "after" improvements were made.

The community of Mt. Mourne won a prize of $100 for making the most improvements in schools, homes, and grounds. This progressive community held a successful fair; it obtained an increase in the teachers' salaries and an extra month added to the school term; through it another grade was added to the course, and by many social diversions the active cooperation of all its citizens was encouraged. Furniture, china, and money were awarded to those changing old, unattractive rooms most pleasingly for the least outlay. For the most convenient kitchen a washing machine was given.

The benefits of electricity on the farm were brought out by debates, schoolchildren's compositions, and various other devices. The success of the campaign lay in the awakening of the "improvement" spirit, which seized hold of the county and contributed much toward setting up ideals and standards of comfortable living, of good judgment, and good taste.

MEXICAN BEAN BEETLE FOUND IN GEORGIA AND TENNESSEE

Thorough scouting by agents of the United States Bureau of Entomology has established the fact that the Mexican bean beetle, a destructive insect pest discovered last fall in Alabama, has now been found in an area covering more than 5,000 square miles in both northwestern Georgia and southeastern Tennessee, and field men of the Department of Agriculture are at work on means for controlling the pest. A reported outlying infestation in Whitley County, Ky., is also being investigated.

Only small sums are at present available for quarantine and control measures by the States of Alabama and Georgia, it is said, but every effort is being made to curb the attacks of the pest and to exterminate it if possible. The quarantined areas now in force will, however, be extended to include the infestations in Tennessee and Georgia, and attempts will be made to restrict the further spread of the beetle from these outlying points of infestation.

It is likely that a branch research station will be established in the vicinity of Chattanooga for a comparison of the conditions there with those found at Birmingham, where the department already has established field headquarters for the work.

CULLING IN THE SOUTH.

Farmers and poultrymen of Louisiana who, unconsciously, have been supporting nonproducing hens and worthless males have been learning important things in the culling demonstrations conducted by poultry specialists employed cooperatively by the College of Agriculture and the United States Department of Agriculture. The demonstrations began early in June and are to continue through July, August and September, in 15 parishes. The work includes instruction in housing, feeding, and caring for growing stock, given by farm and home demonstration agents. Poultry-club children and women owning flocks will have especial attention and help in culling out the "boarder" hens which produce nothing for what they eat.

Organized Drives in Southwest Successful In Exterminating Destructive Rodent Pests

Rabbits, rats, and prairie dogs have been destructive pests in Texas and Oklahoma. The county agents of the United States Department of Agriculture and the State agricultural colleges have done good work in helping to drive them out. Crop insurance should be more easily obtainable as a result of a general rabbit campaign in Caldwell County, Tex. In McMahon community over 2,000 rabbits, weighing 5,000 pounds, were killed in one day. In the communities of Seawillow and Brownsboro in the same county the feature of the day the drive was held was a big dinner spread by the ladies for the hunters. The farmers organized squads and contributed another 2,000 rabbits to the total of 7,000 cottontails killed in Caldwell County.

County Agent Takes a Hand.

In Brown County, Tex., the county agent was told that jack rabbits could not be penned successfully in brushy territory. Crops were being seriously damaged by the rabbits. The agent arranged a drive in a new way. A man on horseback was placed for each half-mile of line at the beginning of the drive. Two semicircular lines were marked off around the pen, one half a mile and the other a mile away from it. This was done by tying newspapers to bushes and trees. When any part of the line of drivers reached one of these lines ahead of the rest he halted until all could get into position. Ten thousand rabbits were killed in a two weeks' campaign. Four hundred jack rabbits which were damaging wheat considerably in Stevens County, Okla., were killed in one day by 15 men.

Prairie dogs were the problem in Alfalfa County, Okla. By means of a poisoning demonstration on two farms in this county it was estmated that over 95 per cent of the prairie dogs were killed.

Boys can be enrolled in many parts of the country for rat extermination. The county agent in Hunt County, Tex., reports that on one day 6,000 rat tails were turned in by boys and many more were expected from outlying districts.

In Kent County, Md., the boys had a rat-killing contest which ended with a total of 1,259 rats killed. The winners had personal records ranging from 172 rats down to 116.

Very often a desire for extermination of one pest is accomplished in connection with a drive on another; thus in Wilson County, Tex., a big rat and rabbit drive was conducted through cooperative efforts on the part of the farmers, who were organized by the county agent. Ten thousand rats and rabbits were killed in the county in one day's drive. As the campaign will last 30 days, it is hoped that the pests will be entirely exterminated.

WHY APPARENTLY GOOD POP CORN SOMETIMES WON'T POP

It is a matter of common experience that pop corn varies greatly with respect to popping. A lot of pop corn may pop all right at one time and not at all at some other time. Again, a lot of apparently good pop corn may not pop satisfactorily at any time.

The two main requisites for good popping are: (1) Good pop corn that has a moisture content of about 12 per cent; (2) heat sufficient to cause the kernels to begin to pop in about 1½ minutes.

A number of causes may interfere with the popping of pop corn. The principal ones are: (1) Having the pop corn too dry; (2) having the heat too great, or not great enough; (3) harvesting pop corn before it had ripened; and (4) allowing pop corn to mix with field corn or sweet corn.

Pop corn should ripen fully on the stalk and should not be harvested until the husks are white and the stalk is dead and has lost its sappy condition. The ears should then be stored in a cool, well-ventilated place. Small wire crates are good receptacles in which to store them. If stored in a warm room in the house, the ears will soon dry out so much that they will not pop. Pop corn that has become too dry for popping may be restored to condition again by putting it in a cool and well-ventilated place, preferably outdoors, for a few weeks. It should, however, be protected against mice.

Pop corn will of its own accord take on or retain the right amount of moisture under natural or suitable atmospheric conditions, as on a shaded porch on the north side of a building. Exposing the ears to the hot sun for a while will cause them to dry out too much for good popping. They will also dry out too much in a kitchen or other warm room. If pop corn that has become too dry is wanted for immediate use it may be improved somewhat by sprinkling it with water before trying to pop it. Sometimes pop corn that is too dry for popping in a wire popper over a flame will pop all right in oil or grease in a pan.

It is not necessary to allow new pop corn to cure for a half year before using it. If it ripens fully and completely on the stalk, the ears can be used at once for popping. In the north it should always be planted early so it will have the full season in which to grow and mature. If planted so late in the spring that the fall frosts kill the stalks before the pop corn has ripened, then there is no way of converting it into a first-class article.

DRESS FORM POPULAR IN WASHINGTON SEWING CLUBS

In the clothing work in Thurston County, Wash., the home demonstration agent, representing the United States Department of Agriculture and the State agricultural college, spent 10 days with three groups of interested women. After finding that the price quoted on commercial dress forms was $2.75, it was agreed to discontinue their use and substitute the gummed paper form, at a cost of $1 to each maker. Eight forms were finished at Grand Mound, 14 women were enrolled at the Spurgeon Creek community fair, and the same plan was presented at the South Bay fair, with an enrollment of 12.

In Pierce County, Wash., the home demonstration agent reports 68 paper dress forms made. A commercial device was purchased for moistening the paper, the cost of which the women propose to meet by paying 10 cents extra for the first 40 forms. One woman said the fun of making a form is worth the $1 it costs. The women have been doing this work themselves after seeing one demonstration.

RICH TOP DRESSING REVIVES FADED LAWNS

Lawns get a tired look late in summer and can be stimulated and made fresh, according to experts of the United States Department of Agriculture, by a light top dressing, composed of 2 parts good loamy soil, one of well-rotted manure, finely comminuted, or any good compost in which soil predominates, with 1½ pounds of sulphate of ammonia or nitrate of soda, for every 1,000 square feet.

The mixture should be applied evenly, and will result in quick stimulation and new green growth. A mixture with a good proportion of soil is strongly urged, especially when the chemicals are used, as they will burn the grass when used too liberally on the lawn. If the grass is watered after the fertilizer is applied it should be thoroughly and liberally done.

Finds Use for Tomato-Seed Waste—Made Into Fixed Oil and Stock Feed

Nearly every pulping factory in the country has a small mountain of waste tomato seed. One two-hundredth of every bushel of tomatoes is seed. This doesn't seem very much, or very important, either, concerning an item which always has been considered waste; but when every manufacturer of catsup, pulp, soup paste, and sauce has several hundred tons of it, and scientists unexpectedly discover that two valuable commercial products can be made from it, the world at large is interested. Fixed oil and press cake, or meal, are the latest additions to the products useful to humanity saved by specialists of the United States Department of Agriculture from huge piles of so-called waste. In the larger factories in the eastern and midwestern tomato belts more than 200,000 tons of tomatoes are pulped annually. The waste seed from these large stations alone totals over 1,000 tons.

Bran Was Once Dumped Into Streams.

Men still young can remember when millers were prosecuted for dumping bran into rivers or streams. People declared it poisoned the fish, but science learned that it had a high food value for man or beast, so that the man who threw bran into a stream to-day would be very likely to land in jail. Tomato seed is just another product saved, like bran, for important uses. The whole story is told in an interesting way in Department Bulletin 927, a copy of which may be had upon request to the United States Department of Agriculture at Washington, D. C.

The first important step in making the new products is to separate the seed from the wet waste. Several methods may be used, but the specialists find that the most practicable method is to equip the ordinary cyclone pulping machine, now in use in most factories, with a 5-mesh woven screen made of No. 12 wire. The mesh is just large enough to admit the passage of the seeds, and these flow out of the machine in a continuous stream, while the cores and skins of the fruit are discharged through the gate as usual. The stream of seed and pulp is then pumped into an adjoining cyclone machine having an ordinary 20-mesh breaker screen.

The pulp and juice pass through this mesh, but the seed is retained, and passes out through the gate. The operation involves no increase of labor, and is continuous and efficient. Experience with this method for more than two seasons at the Arlington Experimental Farm at Washington, D. C., has proved its effectiveness.

Best Grade of Oil Extracted by Pressure.

After the seed has been separated from the wet waste it is washed and dried, and is then ready for the oil-extracting process. Two methods of oil extraction can be used—pressure and solvent extraction. Pressed oil is obtained by mechanical presses, and commands a slightly higher price in the market than the oil which is extracted by chemical solvent processes.

The tomato-seed oil obtained by the expeller process is deep brown, and has a strong odor. It is refined, bleached, and deodorized by the usual methods, and is then comparable in quality with the common edible oils of commerce.

The value of oil cake or meal as stock food has been demonstrated in Italy, where the utilization of tomato waste is in practical operation. An analysis of the meal shows the following composition: Moisture, 7.15 per cent; ash, 4.64 per cent; protein, 37 per cent; nitrogen-free extract, 29.1 per cent; and fiber, 22.1 per cent. This analysis gives tomato-seed meal a favorable footing with some of the better-known seed meals of commerce. It may be used as food for cattle, hogs, or chickens. It has a slightly bitter taste which is masked when mixed with other food.

Owing to the fact that the waste from a single factory would make the profits to be derived from installing a complete manufacturing system hazardous, it would seem advisable to organize a central plant at which all the waste seed from a number of pulping stations could be handled. The specialists who have been studying the process for the Department of Agriculture suggest the possibility of a cooperative plan of manufacture by an association of canners and packers.

Use of Milk Doubled Since 1890; Average Now is Forty-four Gallons

Forty-four gallons of milk is used by each person in the United States annually, according to estimates made by the Dairy Division of the United States Department of Agriculture. This estimate refers to whole milk and does not include that which is consumed in the form of ice cream, cheese, and butter. The amount is about twice as much as that used in 1890, when the per capita consumption was approximately 22 gallons. The dairy specialists point out that the increase in the use of milk in the last 30 years is as great as that in the preceding 280 years.

The present-day consumption of milk in the United States, they say, is equal to about one pint per day, or as much as two small glasses. That is not a great amount when it is known that it includes not only the milk that is used for drinking, but also that used in cooking. This is a small amount compared to the per capita consumption in some European countries. In Sweden and Switzerland, for example, nearly 70 gallons are used by each person annually.

A high value has always been placed on cows in many European countries, and history records a campaign conducted by Julius Caesar in central Europe where he found German tribes living almost exclusively on milk. In order to provide pastures for their cows they forcibly resisted the settlement of any people near them.

In relating the growth of the dairy industry in this country, the department specialists say that in pioneer days each family kept its own cow. The denser the population became the more important it was to have a well regulated and ample commercial supply of milk. Gradually the number of cows increased, and in time a dairy business grew up in various sections. The development of modern methods in the distribution of milk, with economic and sanitary handling, has been closely accompanied by the larger use of this food, they say.

Much of the milk now used in cities comes many miles, and recently improved methods have made it possible to ship it for long distances in refrigerator cars. At the National Dairy Show in Chicago in 1919, milk shipped from the Pacific coast took first prize in the market-milk competition with the highest score ever given to milk in recent years.

Cities have always used a smaller amount of milk in proportion to the number of people than general farming communities, the statistics show. For example, Philadelphia reached the rate of 23 gallons per capita in 1905, which was 15 years later than the country at large reached a consumption of 22 gallons. There are, however, many agricultural and nonagricultural rural districts where cows are not kept and where modern methods of milk distribution are not equal to most cities. The people in such places have to depend on canned milk of various kinds, and this, the dairymen say, is an exceedingly valuable means of supplying a need which 20 or 30 years ago could not have been supplied at all.

Protect Mesquite Cordwood and Posts From Borers by Exposure to Sunlight

Mesquite wood is the most important source of fuel and fence posts in southwestern United States. In many sections it is the only tree available for any purpose. Certain borers destroy mesquite completely within a few months after it is cut, causing great loss and inconvenience. Wood for fuel is piled, commonly, in yards and along the railroads. In such places it is subject to borer damage from February to October, and frequently is reduced to a worthless pile of sawdust and honeycombed sticks.

Fence Posts Made Valueless.

Fence posts are damaged by sapwood-feeding worms in such a way that staples become loose, and the posts must be replaced frequently. In southern Texas and New Mexico thousands of dollars' worth of mesquite has been destroyed in this way after being taken from land cleared for agricultural uses. There is practically no month in southern Arizona when some few of these beetles do not fly about seeking new wood on which to lay their eggs, but during certain periods their number is almost negligible.

Farmers' Bulletin 1197, Protection of Mesquite Cordwood and Posts from Borers, United States Department of Agriculture, which may be had upon application to the Division of Publications, Washington, D. C., says that during certain seasons few of these insects fly about, that they do not like seasoned wood, and that they can not live beneath bark exposed to direct sunlight. Except for immediate use mesquite cordwood should not be cut during the spring and summer. Wood cut between the middle of October and the latter part of January, and loosely ricked so that it dries quickly, usually is little injured. The safest period is from the middle of October to the end of November. Wood should not be stored longer than one year, after which time much damage is done by the large powder-post beetle.

It has been found that extreme heat prevents attack and kills the grubs which may be in the sapwood. Therefore, the department specialists say, the best method for treating posts, and more valuable material that must be cut between March and October, is to lay them flat on the ground in the sunlight. After two weeks turn them bottom-side up, and repeat the turning two weeks later. Two turns in six weeks are sufficient to kill the grubs or prevent attack. This method can be used effectively only between April 1 and October 1.

PINE BARK FISH STEW PROVES POPULAR CANNED

A new, popular product that is being marketed by the canning clubs in the Southern States along the Atlantic and Gulf coasts is "Pine Bark Fish Stew." The development of combination foods peculiar to certain localities has been particularly fostered by the extension agents of the United States Department of Agriculture and the State agricultural colleges who carry on boys' and girls' club work. Almost every country in the world, and practically every district in the United States, has a special "one-piece" dish made of the products in that region. The gumbo of the far South, the New England boiled dinner, the bouillabaisse of Marseille, reproduced in New Orleans, Hungarian goulash, Chinese chop suey, Indian curry, Irish stew, French ragout, are instances of this tendency to blend flavors in one dish.

"Pine bark fish stew" is a characteristic dish in South Carolina. Very probably it was introduced by settlers from the southern part of France and from Italy. Italians living in southern California serve a similar fish stew. The home demonstration agents, seeking a popular and somewhat novel product which would not be in competition with commercial canned goods, decided to have the clubs make a specialty of canning "pine bark fish stew." Onions, tomatoes, celery, pimento, and fish are the ingredients which are cooked slowly in vegetable oil and poured over "southern style" rice. At large out-of-doors gatherings and community lunches this is served on pieces of pine bark, giving the dish its name. In Florida, Georgia, and all the Gulf States various local fish are adapted to the combination.

MASSACHUSETTS PURCHASES IDLE LANDS FOR TIMBER

"The action of Massachusetts in undertaking the purchase and immediate planting of 100,000 acres of burnt and waste lands in the State is a striking illustration of proper recognition of the menace of idle land," says the Forest Service, United States Department of Agriculture. Michigan is building up out of her receded tax lands, by fire protection and tree planting, a State forest of some 330,000 acres, which will be in the course of time one of the great assets of the people and industries of that State.

In seeking a fair and equitable basis on which forest lands in private ownership can be kept steadily at work growing timber it is necessary to recognize the mutual obligation on the part of the public and on the part of the owner. The public must make the growing of timber crops safe from the hazard of forest fires and confiscatory taxation. The most direct and urgent thing to be done is to organize our State protective systems, to keep fire out of the woods. Recognition in our tax laws of the principle of taxing the actual yield of forest lands when the crop is harvested, instead of repeatedly taxing the growing trees, will remove one of the serious barriers to reforestation.

If the public affords this protection it can then, on an equitable and compensating basis, rightfully insist that the land be kept productive. Every incentive should be given the landowner to produce timber upon his land beyond whatever requirements may be laid down in the public interest, because it is shown to be a paying investment to do so.

RECORD TIMBER SALE MADE BY U. S. FOREST SERVICE

The largest timber sale negotiated in a number of years by the Forest Service was made on June 2, when 697 million feet of timber in the Sierra National Forest, California, were awarded to a San Francisco lumberman, with the approval of the Forester. The bid prices per 1,000 feet are: Western yellow pine, $3; sugar pine, $4.25; white and red fir, $1.50; incense cedar $1.50. A price of 50 cents per 1,000 feet is also fixed for unmerchantable timber removed at the option of the purchaser. The purchaser has a two-year construction period, and a 23-year operating period fixed in the agreement. This sale will also make possible the removal of about 700 million feet of privately owned timber.

An initial investment of approximately $3,500,000 is required for development, especially for the construction of a standard gauge railroad, to open up the area, which has hitherto been inaccessible for logging operations. A provision in the contract will secure the use of a portion of this road in an equitable manner as a common carrier, and it will later be utilized to remove additional National Forest timber. Since the timber involved in the sale is mature and has been subject to recurring insect infestation, its sale at this time, together with the general opening of the area, is considered very desirable.

Wood Industries Must Pay Heavily for Long Hauls as Forest Resources Recede

"Reforestation has not been taken seriously by the average business man in the United States," said Col. W. B. Greeley, chief of the Forest Service, United States Department of Agriculture, before the National Association of Wood Turners recently. "Reforestation has been looked upon as a fad quite removed from the practical interests of the manufacturer, as something more concerned with parks or shade trees or rose bushes.

World's Greatest Lumber Market.

"Chicago is the greatest lumber market in the world. Since 1890 an average of over 2,000,000,000 feet of lumber has come into Chicago every year. In 1920 the figure was nearly 2,500,000,000 feet, 60 per cent of which went into local construction and manufacturing industries. In 1900 the average freight paid on lumber coming into Chicago was less than $3 per M feet. Since that time the local sources of supply for this territory have been exhausted one after another. Lumber shipments have traversed greater and greater distances, and the average freight bill paid by the Chicago distributor has steadily risen to more than $12 per M feet.

"In other words, the increased transportation charge on lumber shipments into Chicago, as a result of the exhaustion of the forest regions surrounding it, represents a toll of $22,500,000 annually. And while this has happened there have accumulated in the Central and Lake States nearly 23,000,000 acres of logged-off forest land which is producing neither farm crops nor timber; $22,500,000 is the yearly tax which the wood-using industries and home builders, supplied through Chicago, pay for the idleness of a large part of the soil in the surrounding States which should furnish the natural supply for this district. This sum would plant every year 1,500,000 acres of land with forest trees.

"This illustration may be extended to cover the four States of Illinois, Indiana, Wisconsin, and Michigan. These States consume annually between 4,000,000,000 and 5,000,000,000 feet of timber in furniture factories, sash and door mills, factories manufacturing agricultural implements, wood-turning establishments and other wood-using industries. Sawmills are excluded from this estimate, also the requirements for general construction and housing, and the consumption of lumber on farms. The manufacturers referred to represent an invested capital of $760,000,000 and enroll 260,000 skilled employees. This great manufacturing industry was built up on the softwood forests of the Lake States and the hardwood forests of the Ohio and upper Mississippi valleys, whose products were available at a low transportation cost. In these four States enough forest land to supply in full the needs of these industries now stands idle.

Rapidly Exhausting Timber Supplies.

"We are cutting our timber probably four times as fast as timber is being grown. It is useless to decry the generous use which American industry has made of our forests. It has contributed powerfully to the industrial development and commercial supremacy of the United States. The forestry problem does not result from the liberal use of our forests, but from our failure to use our forest-growing land. There is an ample area of land in this country, which is not tillable, to support all of our timber requirements, all of our wood manufacturers, all of our home building and agricultural use of lumber, indeed, an even larger export trade than at present, if that land can be kept at work growing timber. Reforestation has become a commercial necessity of the United States."

WEATHER BUREAU STUDIES HURRICANES AND STORMS

West Indian hurricanes and the storms of the North Pacific Ocean are disturbances which endanger an increasing number of vessels and cargoes each year, and yet, because of lack of observations, not all the help that could be given by the Weather Bureau of the United States Department of Agriculture is available. Among the meteorological studies in which the Weather Bureau seeks the cooperation of seamen, with a view to increasing the data available, these two subjects are of special interest to the Western Hemisphere.

The construction of the Panama Canal has had the effect of bringing a larger amount of shipping each year within the domain of destructive hurricanes. An important result of a better understanding of the hurricane should be the formulating of navigation rules in the dangerous regions of the West Indies. The experience of captains whose vessels encounter hurricanes might offer a solution of some of the difficult problems of maneuvering.

As compared with the Atlantic, few ships ply the Pacific Ocean, and it will be many years before a complete series of weather observations can be obtained for this vast ocean. Observations are much needed from the area lying between Midway Island, and Dutch Harbor as an aid in studies now being made of the relation between storm development within this area and subsequent weather events on the Pacific coast, as well as in the interior. The Weather Bureau desires to have seamen everywhere appreciate that their returns are of great practical value and fully worth the trouble involved in making them.

Sweet Clover Seed in Wheat May Flavor Flour and Bread

Results of an experiment with sweet clover seed in wheat, recently made by the United States Department of Agriculture, show that the three varieties of clover all have the same effect on the milling and baking value and that the aroma when only faintly present in the wheat, is not noticeable in the bread and only slightly so, if at all, in the flour. Bread made from flour containing clover seed gave out a decided aroma in baking and in the samples in which more than 0.5 per cent of the seed had been mixed, a disagreeable taste was noticed.

Sweet clover is frequently found as an impurity in wheat. Commercial firms screen, fan, and scour wheat before grinding, and, though this may and usually does remove the last vestige of the actual sweet clover seed, the aroma sometimes persists. The Bureau of Markets and Crop Estimates administers the grain standards act, and sweet clover or anything else that affects the milling value of wheat is a matter of interest to its representatives. Experiments were made to determine whether the aroma was injurious or merely disagreeable, and what happened when a little of the clover seed was ground with the flour.

Sweet clover of one species or another occurs in practically every State in the Union. Each of the different species or varieties gives off the same characteristic aroma, namely, that of coumarin, a compound which forms the basis of the cheaper so-called "vanilla" extracts.

The three most common varieties of sweet clover were studied in this experiment. Two series of 10 samples each were prepared for each variety and varying amounts of clover seed were mixed with them, beginning with 0.1 per cent and gradually increasing up to 5 per cent. These samples were stored in air-tight cans for two months. The clover seed was then removed from one series and both were milled.

During the milling of the series from which the sweet clover seed was removed

before grinding, a faint sweet clover aroma was given out by those samples which had contained less than 0.7 per cent, while those in which greater amounts had been mixed, gave out an unmistakable aroma. In the feed and flour resulting a sweet clover aroma was less pronounced and in some cases not perceptible at all. It could not be detected in the cold bread made from the resultant flour.

SEEK NEW PLANTS FOR WESTERN BUNCH-GRASS RANGES

Overgrazing has injured or destroyed much natural bunch-grass pasturage, a fact which draws attention to the radical difference in this respect between bunch grasses and creeping grasses. The work of cattlemen having lands under fence and, in addition, the work on the national forests has shown that the original carrying capacity of the ranges can be restored by a proper system of grazing, say the specialists in the United States Department of Agriculture. These specialists declare that the fence alone—that is, the control of the land—will solve the Western range problem so far as maintaining its normal carrying capacity.

Beyond what control can do, however, there are large possibilities in finding other grasses and legumes which, when introduced, will spread of their own accord and make more pasturage than the native. The basis for this belief is found in the lowlands of California, now composed mainly of grasses and other plants introduced from the Mediterranean regions, which supply at least 80 per cent of the total pasturage. These introduced plants have proved far more aggressive than the native ones.

Practically all the pasture grasses of the Northeastern quarter of the country, also, have been introduced there, including blue grass, white clover, redtop, timothy, Canada blue grass, and many others. In the South, likewise, the most valuable pasture grasses are introduced, such as Bermuda, carpet, Dallis grasses, Japan clover, and bur clover.

"These grasses must be sought in Asia, where almost every condition that exists in our bunch-grass range lands is duplicated," said one of the specialists in the Bureau of Plant Industry. "Asia is very rich in grasses and legumes. It has been impossible to obtain seeds without going after them, because there are no experiment stations there."

Incidentally, the specialists mention two aggressive Asiatic plants, neither of them very desirable, the Russian thistle and the rosy saltbush. Despite the undesirability of the Russian thistle and the additional fact that it is an outlaw in some States, it is safe to say it is more of an asset than a liability to some sections of the West. On many of the drier range lands this thistle makes up a very large percentage of the available feed, both for pasturage and for preserving as winter feed. Indeed in some regions of the Middle West the farmers have for years been saving Russian thistle for winter feeding, stacking it with as much care as might be given to any other forage.

Excess Wool Profits Case Decided for Government by U. S. District Court

The right of the Federal Government to impose certain restrictions with respect to the profits which wool dealers might make on wool handled by them in 1918, when the Government took over the year's clip, has been definitely settled in favor of the Government by Judge Sessions in the United States District Court for the Western District of Michigan, at Grand Rapids. The defendant's motion to dismiss the Government's case was denied. While this did not involve a large amount, the principal issue is of great importance in view of many cases yet to be prosecuted by the Government, some of them involving large sums of excess profits.

Government Took Clip of 1918.

To aid in the prosecution of the war the Government, in the spring of 1918, took over the wool clip of the season. To make this purpose effective, regulations were issued by the wool division of the War Industries Board, requiring dealers who wished to handle wool to obtain permits or licenses. When the War Industries Board was disbanded this work was transferred to the Department of Agriculture. These licenses were, in effect, contracts between the dealers and the Government.

The regulations also limited definitely the profits which wool dealers might make on all domestic wool handled by them. In the case of country dealers or buyers, such as the one decided by Judge Sessions, this profit was limited to 1½ cents a pound, the whole object being to prevent speculation and to stabilize the wool market at a time when it was important to the success of the war that America's Army and Navy be assured proper clothing.

All except about 60 wool dealers have voluntarily paid over to the Government any excess profits made. Among those who did not pay was the defendant in the above-stated case. Judge Sessions declares in his decision that in time of war broad powers are conferred upon the President, both by the Constitution and by standing statutory enactments of Congress, but the President's powers were not necessarily involved. The power of Congress to authorize the action of the War Industries Board, the court said, could not be doubted. With the power conferred upon it by Congress this governmental agency had entered into a contract with the defendant, and the defendant, the court held, was in no position to challenge the right of the congressional branch of the Government to approve and affirm that contract.

Court Declares Contract Valid.

Congress, the court declared, had approved and affirmed contracts of this kind made by the board through its officers. If the contract was valid in behalf of the Government, then the Government certainly had a right to bring suit in its own courts to enforce its terms. The Government was represented by the United States attorney for the western district of Michigan, assisted by one of the attorneys in the office of the Solicitor of the Department of Agriculture.

DEVELOP SCALD-RESISTENT BARLEY

Experiments of the United States Department of Agriculture in connection with various State authorities to produce plants resistent to certain adverse conditions have brought out a number of new varieties adapted to various regions. Among the most recent is Tennessee winter barley, which is being grown with success in sections of California where barley scald has been prevalent. This disease occurs in most of the fields of early barley inspected by department men in the northern portions of the State and has made its appearance even in late-sown fields. Barley plants almost dead from the attacks have been observed in spots. The Tennessee winter barley has demonstrated its ability also to survive excessive quantities of water in contrast to common or coast barley, which has been damaged under the same conditions.

Further experiments with resistent varieties and hybrids showing immunity in previous years will be made at Salinas, Davis, El Centro, Fresno, and Escondido.

Hearing Will Be Held on the Labeling of Vinegar from Dried-Apple Products

The Secretary of Agriculture announces that a hearing to discuss the labeling of vinegar, particularly the product made from dried-apple chops and dried skins and cores, or a mixture of these materials, will be held at his office on Wednesday, August 17, 1921, at 10 a. m. The trade and other parties interested are invited to attend and present their views on this subject orally or in writing.

The department has for some time past been giving consideration to the labeling of the products made from dried-apple chops and apple cores and skins, or from mixtures of these, according to the department's specialists. Food Inspection Decision 140, which relates to the labeling of vinegar, regards the term "apple vinegar" and the term "cider vinegar" as synonymous, and also requires that an article made from dried-apple products shall be labeled to show the material from which it is produced.

Vinegar Varieties to be Determined.

The purpose of this hearing is to determine, on the basis of the information acquired and the evidence submitted, not only the proper nomenclature for vinegar made wholly or in part from dried-apple products but also the extent to which a differentiation between the terms "apple vinegar" and "cider vinegar" may be justified.

Dried-apple products used in the manufacture of this type of vinegar are ordinarily sulphured. Chemists have relied to a considerable extent upon the determination of sulphur compounds in the finished product to detect vinegars made from dried-apple materials. This has led manufacturers who try to conceal the nature of their product to remove the sulphur compounds by the use of barium carbonate. Barium salts are known to be toxic, and vinegar which has been treated with barium carbonate does contain a certain amount of barium salts in solution.

Pending the hearing announced above, and with the object of removing the incentive to employ barium salts for this purpose, the department will offer no objection to the labeling of vinegar made from such waste materials as "apple vinegar." This tentative decision, according to the department officials, is without prejudice to any decision that may be reached as a result of the facts brought out at the hearing.

The labeling of vinegar made from apple waste as "cider vinegar" or "apple cider vinegar" will be regarded as a misbranding, say the officials.

All parties who are interested in the subject are invited to attend the hearing and give the department the benefit of their views either orally or in writing. Those who desire may present their views to the Secretary of Agriculture in writing on or before August 17, the date of the hearing.

YOUNG BOYS AND GIRLS CAN TOMATOES PROFITABLY

Four boys and four girls, whose ages ranged from 10 to 13, were the members of the Damascus Canning Club of New Haven County, Conn. Of these children only two were descendants of the Pilgrims, states the county agent employed cooperatively by the State agricultural college and the United States Department of Agriculture; an Italian, an Austrian, two French-Irish, and two Irish children bore witness to the value of the club as a means for Americanization.

These youngsters, who were too young to market their own products, without help from the county club agent, produced 1,200 cans of tomatoes packed in tin. They set, hoed, cultivated, picked, peeled, and canned their tomatoes, however. The original plan was to have the four boys raise and the four girls can the tomatoes, but when it came time to set out plants the girls were anxious to share the fun and the work. When the canning time came the boys wanted to do that, too. After each member had been paid 10 cents an hour for labor as recorded, there was over $100 left. This was divided up pro rata, according to the number of hours worked by each member.

MORE MILK USED FOLLOWING CAMPAIGN.

Part of the program of a recent milk campaign in Hampden County, Mass., was to secure the interest of the labor unions and industrial groups in increasing the consumption of milk. Talks on the value of milk in the diet were given before 40 different local unions by the county home-demonstration agent, cooperatively employed by the State agricultural college and the United States Department of Agriculture. Although there is no definite way of learning just how many laboring men were convinced that they and their families should use more milk, there was an indication that the activity was worth while. The men who were reached varied from the unskilled laborer, such as coal heavers and street cleaners, to highly skilled craftsmen, and included many nationalities.

One interesting and direct result of the work with a factory group was the installation of a daily milk service. Milk was delivered twice a day—at 10 a. m. and 3 p. m.—by a local retailer and sold to the employees at cost. The growth of this service has been astonishing. Starting with 100 half-pint bottles, the number has steadily increased to 925 a day. The manager of the factory states that the installation of the milk service has already produced results which show most conclusively that suitable food served under proper conditions results in better application and greater production in an industry.

FARM FAMILIES LIVE WELL AND HAVE GREAT VARIETY OF DIET

(*Continued from page 1.*)

lemons and oranges from California and Florida, canned corn from Maine, sweet potatoes from New Jersey, cheese from Wisconsin, maple sirup from Vermont, flour from Minnesota, and crackers or breakfast foods made anywhere are sold in most small towns at reasonable prices. Indian succotash, Dutch crullers, Italian macaroni, German sauerkraut, and Spanish pimiento are common foods whose names betray their various foreign origins.

Wide Distribution of Food Products.

Whether the food was well cooked and attractively served, the studies do not show. The fact that almost twice as much cooking fat was used by the farm families as by the general average confirms the impression that some farm housewives are inclined to cook too many foods by frying. One of the greatest services which the home demonstration and girls' club movements are rendering is to arrange for the skillful housewives in a community to show how they prepare the good things for which their tables are famous.

In spite of individual exceptions, farm diets in the United States seem to be furnished with more than enough energy food, ample and varied protein. Lime is well supplied in milk. There is probably a fair proportion of iron, vitamines, and indigestible bulk, though the margin of safety for these would be greater with more eggs, more coarse cereals, and a greater variety of vegetables and fruits, especially more green vegetables.

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